



United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with
Missouri Department of
Natural Resources;
Missouri Agricultural
Experiment Station; and
United States Department
of Agriculture, Forest
Service

Soil Survey of Boone County, Missouri



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How To Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

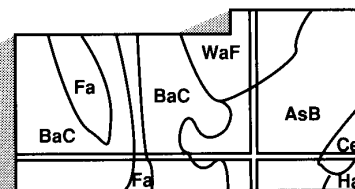
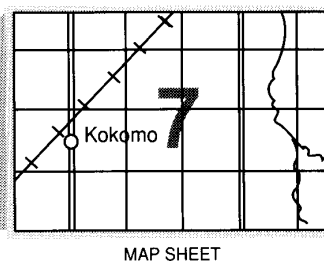
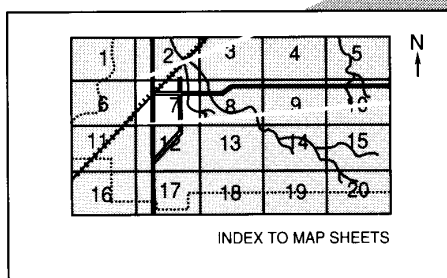
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1997. Soil names and descriptions were approved in 1998. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1997. This survey was made cooperatively by the Natural Resources Conservation Service; the Missouri Department of Natural Resources; the Missouri Agricultural Experiment Station; and the United States Department of Agriculture, Forest Service. The survey is part of the technical assistance furnished to the Boone County Soil and Water Conservation District. Financial assistance was provided by the Missouri Department of Natural Resources and the Boone County Commission.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

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Cover: An area of the Keswick-Hatton-Winnegan association is in the foreground, and an area of the Weller-Bardley-Clinkenbeard association is in the background. The combined acreage of these two associations makes up about 54 percent of Boone County.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service homepage on the World Wide Web. The address is <http://www.nrcs.usda.gov>.

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Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land user identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described, and information on specific uses is given. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

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Soil Survey of Boone County, Missouri

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United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with the Missouri Department of Natural Resources; the Missouri Agricultural Experiment Station; and the United States Department of Agriculture, Forest Service

BOONE COUNTY is in central Missouri (fig. 1). It is bordered on the east by Callaway County and Audrain County, on the north by Audrain County and Randolph County, and on the northwest by Howard County. The Missouri River forms the southwest border.

The county has a land area of 442,259 acres, or about 691 square miles. It includes parts of two major land use areas. The Central Claypan Area covers the northeastern and east-central parts of the county. The rest of the county is in the area classified as Central Mississippi Valley Wooded Slopes.

In 1990, the population of Boone County was 112,379. Columbia, the county seat, is the largest city in central Missouri. It had a population of 69,101. The main campus of the University of Missouri is in Columbia, along with Stephen's College and Columbia College. Other towns in the county are Centralia, Sturgeon, and Harrisburg in the north, Rocheport in the west, and Ashland and Hartsburg in the south.

This survey updates the soil survey of Boone County that was published in 1962 (Krusekopf and Scrivner, 1962). It provides more detailed maps and additional interpretations of the soils.

General Nature of the County

This section provides some general information about Boone County. It describes physiography, relief, and drainage; history and development; and climate.



Figure 1.—Location of Boone County in Missouri.

Physiography, Relief, and Drainage

Several major physiographic regions occur in Boone County. Where the Missouri River borders the county on the southwest side, three flood-plain areas, separated by bends in the river, parallel the adjacent uplands. The river hills form a band between 2 and 5 miles wide. The soils in these areas are mainly well drained and formed in deep loess. Also included are

areas of exposed bedrock and bedrock residuum at the lower elevations and limestone cliffs along the edge of the Missouri River flood plain.

The northeastern part of the county is characterized by broad, nearly level upland ridges and very gentle side slopes. The soils formed in deep loess and in loess over glacial till. They are clayey and are poorly drained or somewhat poorly drained. An arm of this landscape, between 1 and 5 miles wide, extends to the south across much of the eastern part of the county to just past Ashland.

Most of the rest of the county is characterized by medium and narrow ridges with moderate to steep side slopes. The soils are clayey and formed in loess over glacial till. The loess is thin or nonexistent on the side slopes. This area is broken up by a number of narrow and medium-sized stream bottoms.

The lowest elevation in the county is about 540 feet above sea level where the Missouri River leaves the county at its southern tip. The highest elevation, about 940 feet above sea level, is on a broad ridge just north of the headwaters of Little Cedar Creek, on the drainage divide between Hinkson and Cedar Creeks. Local relief ranges from an elevation change of 320 feet in less than a quarter mile at the southern end of the county to a change of less than 10 feet in about 1 mile in the area just west of Centralia.

In the northeast corner of the county, about 6 percent of the land area drains into tributaries that flow north and northeast toward the Salt River in Audrain County. The Salt River flows eastward to the Mississippi River. Surface water in the rest of the county drains into the Missouri River through a number of tributaries, including Bonne Femme, Cedar, Little Cedar, Hinkson, Jemerson, and Perche Creeks.

The other major drainage feature in the county is a system of karst topography west and south of Columbia. In this area, numerous sinkholes, some filled with water, overlie a complex network of caves and springs.

History and Development

Evidence of the earliest known inhabitants of the survey area has been found at more than a thousand archaeological sites. Arrowheads known as Clovis, Fulton, and Dalton points are remnants of the Paleo-Indian period that occurred between 14,000 and 9,000 years ago. Other signs of early Native American occupation include imported goods, such as copper ore, seashells, and exotic stones. Cultivation of corn in the county began somewhere between 1,100 and 300 years ago. At the time just before European-American

expansion into the area, it was occupied by the Osage and Missouri tribes.

The first known European-American settlement was established in 1812, when John and William Barry, William Baxter, and Reuben Gentry built a log cabin in Thrall's Prairie near the present site of Rocheport. By 1815, all Native Americans had been forced from the area. Increasing numbers of settlers began arriving from the East, particularly from Kentucky, Tennessee, and Virginia.

In 1816, Howard County was established. It spanned a vast area between the Missouri River and the Iowa border and included the area that is now Boone County. From 1816 to 1818, General William Rector directed the land survey of the area and established the township, range, and section lines that are still in use.

Boone County was established as a political unit in 1820, the same year as Missouri statehood. The county was named after Daniel Boone, who had recently passed away near St. Charles. Originally, the new town of Smithton was intended to function as the county seat. Situated about a half mile to the west of what is now downtown Columbia, Smithton was a 2,720-acre tract of land that had been purchased by wealthy speculators from the land office in Franklin. The location, however, turned out to be poor because of a lack of access to an adequate water supply.

The town of Columbia was established next to the Flat Branch of Hinkson Creek. Columbia became the county seat in 1821. The following years were marked by continued growth. Many pioneers passed through the town as they traveled the "Boone's Lick" trail, a route that eventually connected the eastern United States to the Santa Fe Trail. Others settled in the area. Many of these people were slaves and slave owners, a factor that would lead to major tensions in later years.

By the early 1830's, Columbia had a population of about 700 and there was already momentum for making it a center for culture and education. A theatre group was begun in 1832, and in 1835 the painter George Caleb Bingham opened his studio on Guitar Street. The first paper mill in the State was built near Rock Bridge at this time, although it did not last for very long. Columbia was also the site of the State's first agricultural fair in 1835.

A diverse agricultural base was the driving force of the economy. Commonly grown crops included corn, tobacco, hemp, and flax. In addition to good soils and cheap land prices, Boone County farmers had the advantage of relatively easy access to the Missouri River, which facilitated transport of their products to distant markets.

Columbia's greatest legacy of that era was the establishment of higher education. As early as 1831, the creation of a college had been planned. In 1834, Columbia College was opened. It became the University of Missouri in 1839, but it did not receive material support from the State until 1867. Local support for the university was strong enough that local residents would pitch in to pay faculty salaries.

Until 1868, the university was open only to men. In the 1850's, opportunities for higher education became available for women at Christian College and Baptist Female College, which were later to become Columbia College and Stephen's College, respectively.

Boone County was very much caught in the middle during the Civil War. Slavery was in practice, and support and sympathy for the Confederacy were considerable. But opposition to slavery also ran deep. During the war there were numerous clashes throughout the county. From March to November of 1862, the university was closed and garrisoned by the Union army. In September 1864, Centralia was the site of one of the war's great atrocities. A massacre of unarmed Union troops on furlough was carried out by Confederate guerrillas led by "Bloody Bill" Anderson.

The years immediately following the Civil War were marked by an expanding population and economy. A feeder line from Centralia connected Columbia to the Northern Missouri Railroad. This event was a significant advance for the town. Industries that developed and grew at this time included timber mills, flour mills, and the production of carriages.

Since that time, population growth and economic development in the county have continued, with variations tied to national demographic and economic trends. Columbia is an expanding urban area, and agriculture, though still a dominant feature on much of the landscape, now plays a secondary role in the economy. Higher education, insurance centers, and medical centers are the major sources of commerce.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Fulton, Missouri, in the period 1961 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 29.6 degrees F and the average daily minimum temperature is 19.8 degrees. The lowest temperature on record, which occurred on January 18, 1930, is -22 degrees. In summer, the average temperature is 74.7 degrees and

the average daily maximum temperature is 85.9 degrees. The highest recorded temperature, which occurred on July 15, 1954, is 116 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 38.94 inches. Of this, 26.8 inches, or about 69 percent, usually falls in April through September. The growing season for most crops falls within this period. The heaviest recorded 1-day rainfall was 5.37 inches on August 12, 1993. Thunderstorms occur on about 52 days each year, and most occur from May to August.

The average seasonal snowfall is 22.4 inches. The greatest snow depth at any one time was 14 inches recorded on January 20, 1995. On the average, 26 days of the year have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year. The heaviest 1-day snowfall during the period of record was 11 inches on December 31, 1973.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 83 percent. The sun shines 66 percent of the time possible in summer and 49 percent in winter. The prevailing wind is from the southwest. Average windspeed is highest, 12 miles per hour, in March.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the

geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some

of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

The descriptions, names, and delineations of the soils identified on the detailed soil maps in this survey do not fully agree with those in the surveys of adjacent counties published at a different date. Differences are the result of additional soil data, variations in the intensity of mapping, and correlation decisions that reflect local conditions. In some areas, combining small acreages of similar soils that respond to use and management in much the same way was more practical than mapping these soils separately.

General Soil Map Units

The general soil map in this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. These areas are called associations. Each association on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils and some minor soils or miscellaneous areas. It is named for the major soils. The soils making up one association can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or a building or other structure. The soils in any one association differ from place to place in slope, depth, drainage, and other characteristics that affect management.

1. Adco-Mexico-Putnam Association

Setting

Landscape: Uplands

Landform: Ridges

Slope range: 0 to 3 percent

Composition

Extent of the association in the survey area: 3 percent

Extent of the soils in the association (fig. 2):

Adco and similar soils—43 percent

Mexico and similar soils—39 percent

Putnam and similar soils—17 percent

Minor components—1 percent

Minor Components

- Leonard soils on side slopes

Component Description

Adco

Position on the landform: Summits

Parent material: Loess over pedisediment

Slope class: Nearly level

Mexico

Position on the landform: Summits

Parent material: Loess over pedisediment

Slope class: Very gently sloping

Putnam

Position on the landform: Summits

Parent material: Clayey loess

Slope class: Level

2. Mexico-Leonard Association

Setting

Landscape: Uplands

Landform: Ridges

Slope range: 1 to 6 percent

Composition

Extent of the association in the survey area: 16 percent

Extent of the soils in the association (fig. 3):

Mexico and similar soils—51 percent

Leonard and similar soils—46 percent

Minor components—3 percent

Minor Components

- Keswick and Armstrong soils on side slopes

Component Description

Mexico

Position on the landform: Summits

Parent material: Loess over pedisediment

Slope class: Very gently sloping

Leonard

Position on the landform: Shoulders

Parent material: Fine-silty loess over till

Slope class: Gently sloping

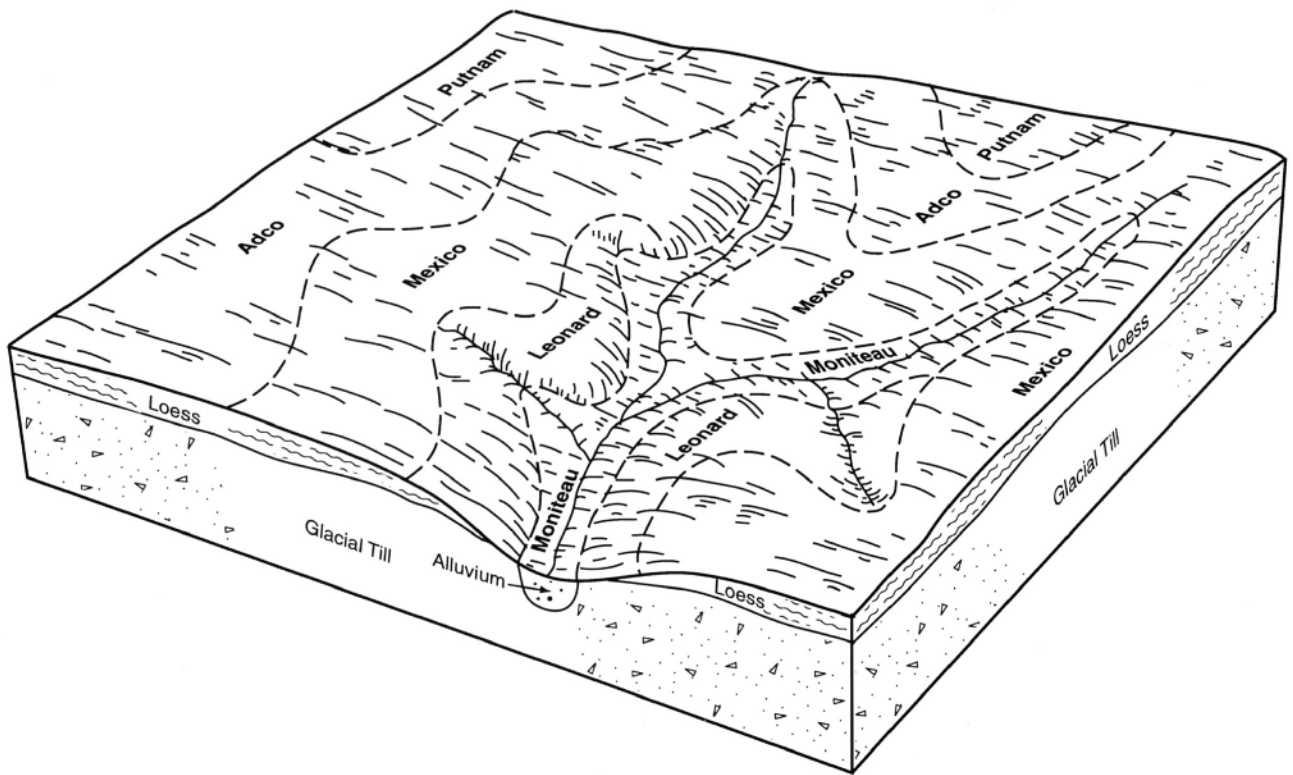


Figure 2.—Typical pattern of soils and parent material in the Adco-Mexico-Putnam association.

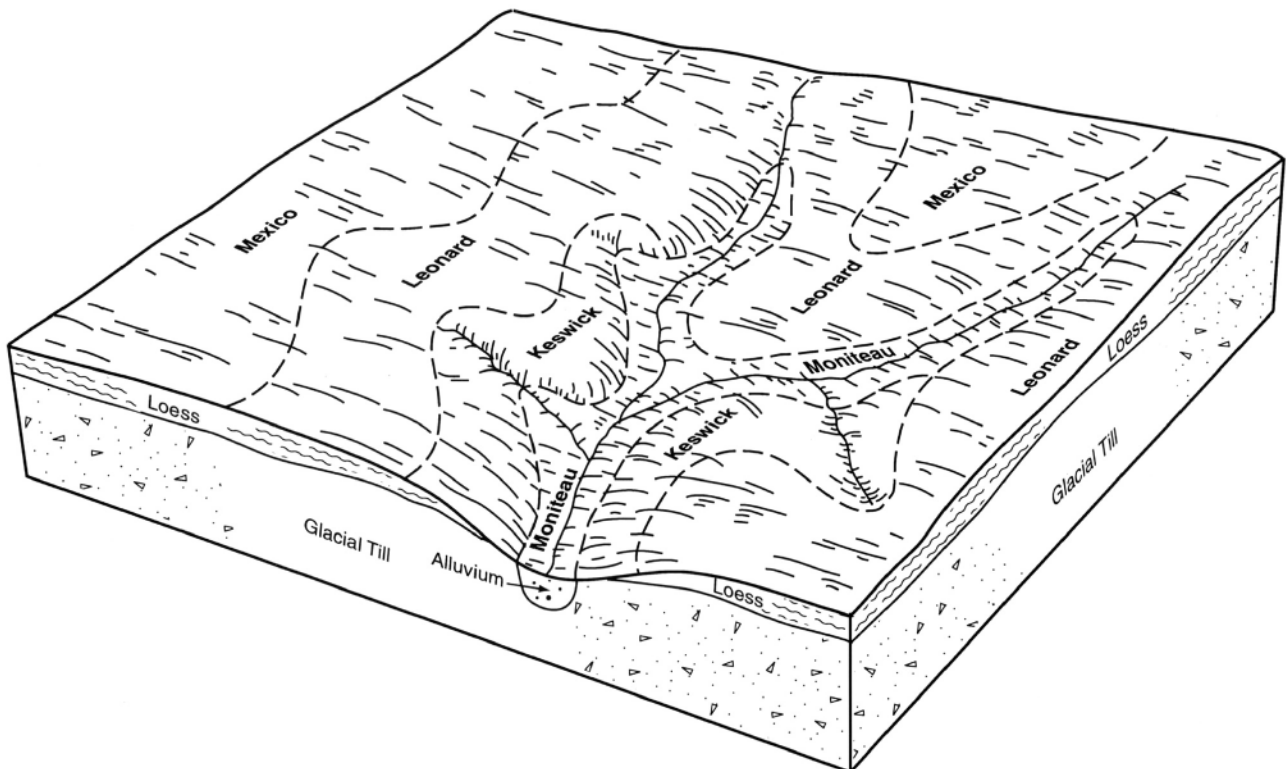


Figure 3.—Typical pattern of soils and parent material in the Mexico-Leonard association.

3. Keswick-Hatton-Winnegan Association

Setting

Landscape: Uplands

Landform: Ridges and hills

Slope range: 2 to 35 percent

Composition

Extent of the association in the survey area: 36 percent

Extent of the soils in the association (fig. 4):

Keswick and similar soils—63 percent

Hatton and similar soils—13 percent

Winnegan and similar soils—10 percent

Minor components—14 percent

Minor Components

- Freeburg soils on stream terraces

- Vanmeter and Leonard soils on side slopes
- Moniteau soils on flood-plain steps
- Lenzburg soils in strip-mined areas

Component Description

Keswick

Position on the landform: Backslopes

Parent material: Loess over clayey till

Slope class: Moderately sloping and strongly sloping

Hatton

Position on the landform: Shoulders

Parent material: Loess over fine-silty pedisediment

Slope class: Gently sloping

Winnegan

Position on the landform: Backslopes

Parent material: Clayey till

Slope class: Moderately steep and steep

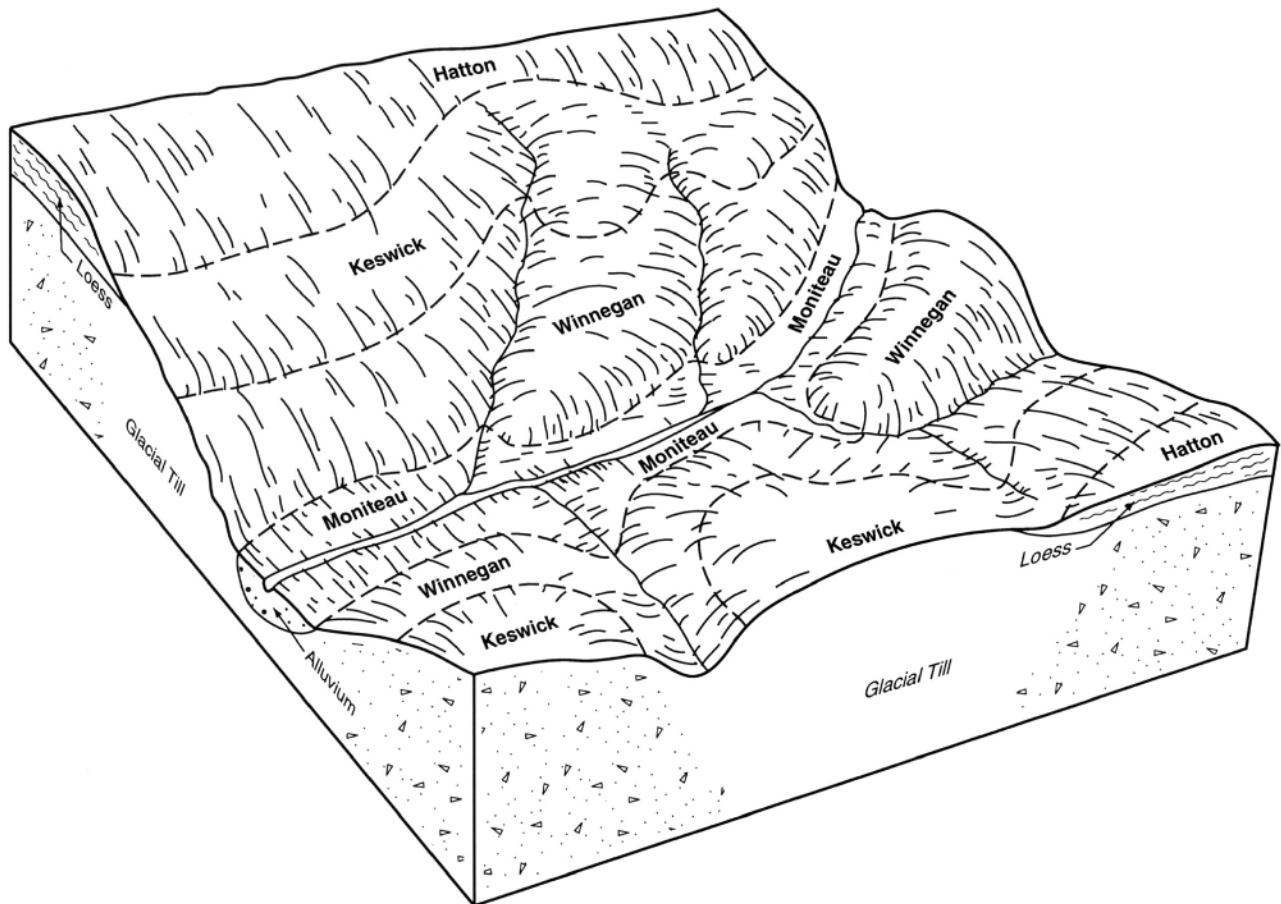


Figure 4.—Typical pattern of soils and parent material in the Keswick-Hatton-Winnegan association.

4. Weller-Bardley-Clinkenbeard Association

Setting

Landscape: Uplands

Landform: Ridges and hills

Slope range: 2 to 45 percent

Composition

Extent of the association in the survey area: 18 percent

Extent of the soils in the association (fig. 5):

Weller and similar soils—37 percent

Bardley and similar soils—19 percent

Clinkenbeard and similar soils—14 percent

Minor components—30 percent

Minor Components

- Rock outcrop on side slopes
- Armstrong and Keswick soils on side slopes

- Menfro, Winfield, and Wrengart soils on side slopes
- Freeburg soils on stream terraces

Component Description

Weller

Position on the landform: Summits, shoulders, or benches

Parent material: Loess

Slope class: Gently sloping and moderately sloping

Bardley

Position on the landform: Backslopes

Parent material: Colluvium over clayey residuum

Slope class: Steep and very steep

Clinkenbeard

Position on the landform: Backslopes

Parent material: Clayey colluvium

Slope class: Steep and very steep

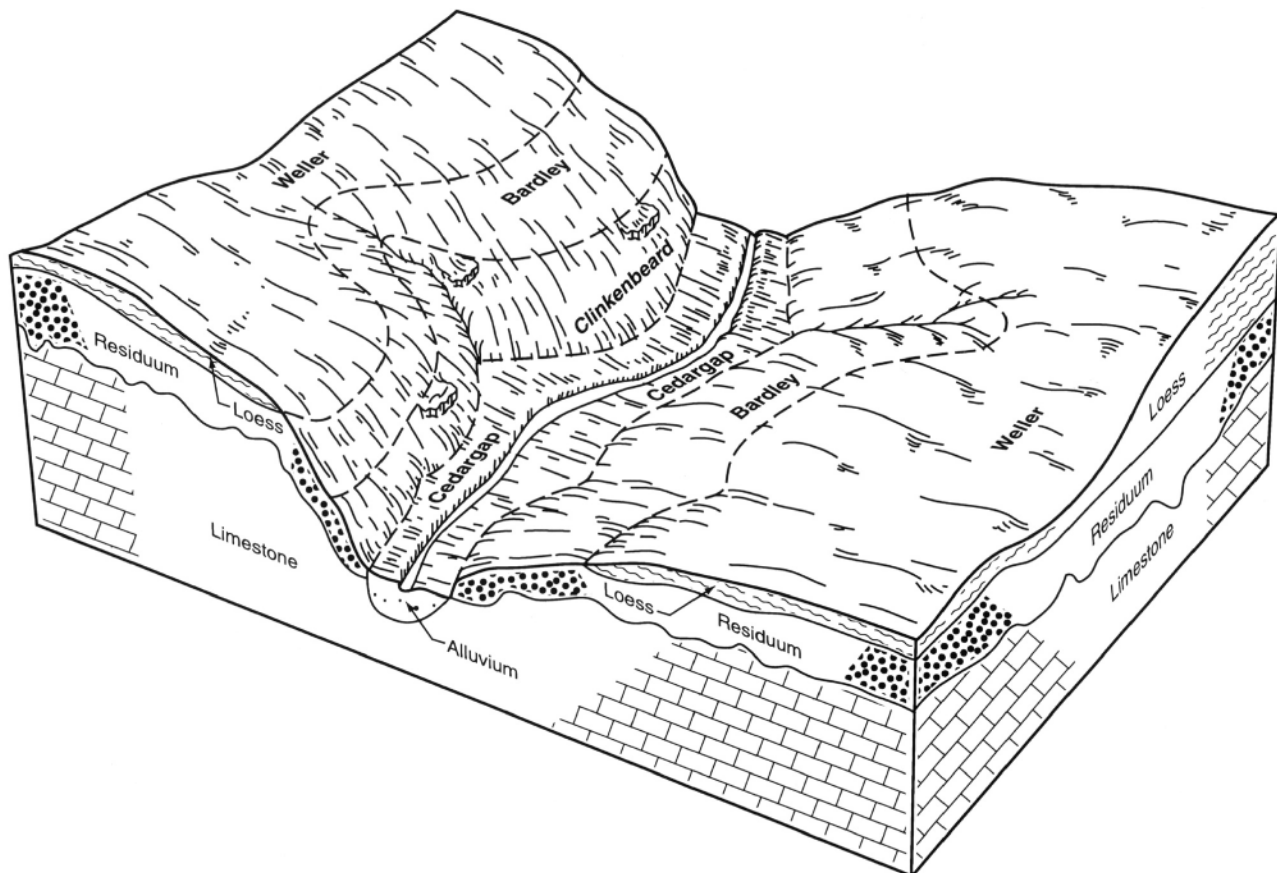


Figure 5.—Typical pattern of soils and parent material in the Weller-Bardley-Clinkenbeard association.

5. Arisburg-Armstrong Association

Setting

Landscape: Uplands

Landform: Ridges and hills

Slope range: 1 to 9 percent

Composition

Extent of the association in the survey area: 2 percent

Extent of the soils in the association (fig. 6):

Arisburg and similar soils—50 percent

Armstrong and similar soils—40 percent

Minor components—10 percent

Minor Components

- Vanmeter, Rocheport, and Bonnefemme soils on side slopes

Component Description

Arisburg

Position on the landform: Summits and shoulders

Parent material: Loess

Slope class: Very gently sloping and gently sloping

Armstrong

Position on the landform: Backslopes

Parent material: Loess over till

Slope class: Moderately sloping

6. Menfro-Winfield-Rocheport Association

Setting

Landscape: Uplands

Landform: Hills

Slope range: 3 to 45 percent

Composition

Extent of the association in the survey area: 13 percent

Extent of the soils in the association (fig. 7):

Menfro and similar soils—47 percent

Winfield and similar soils—28 percent

Rocheport and similar soils—21 percent

Minor components—4 percent

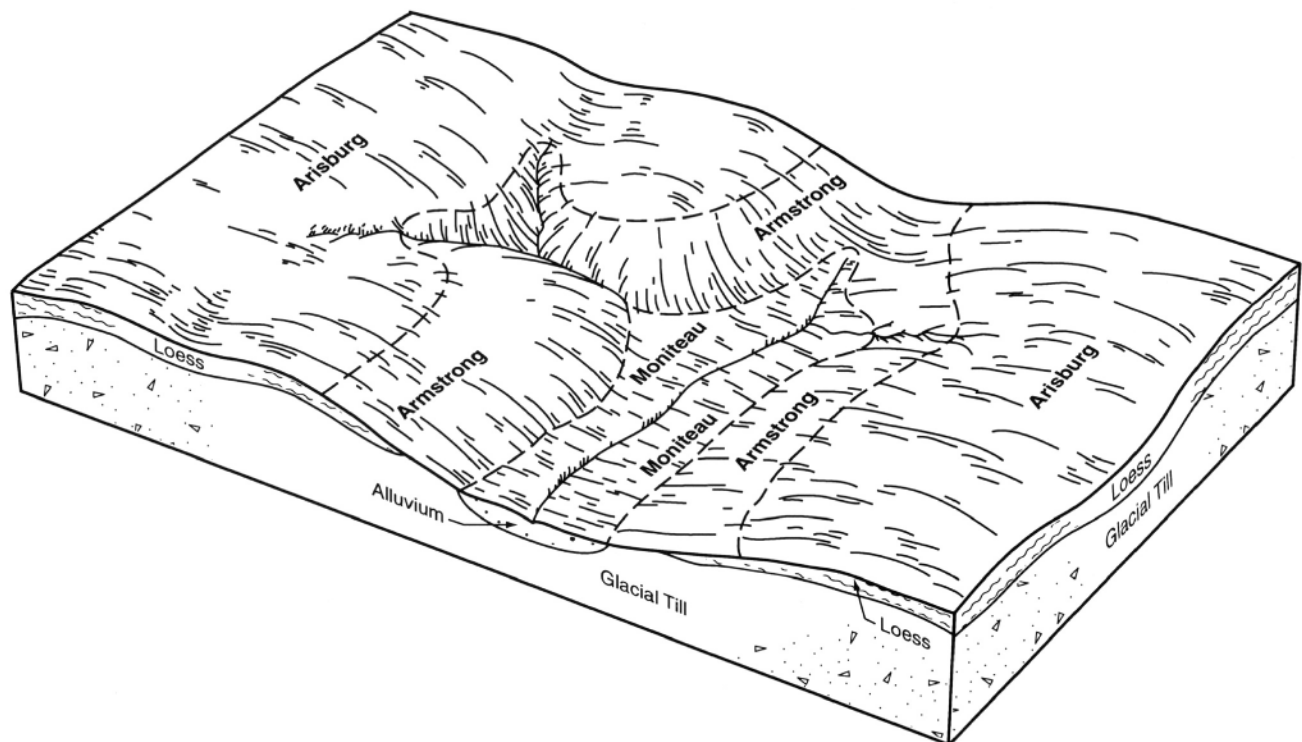


Figure 6.—Typical pattern of soils and parent material in the Arisburg-Armstrong association.

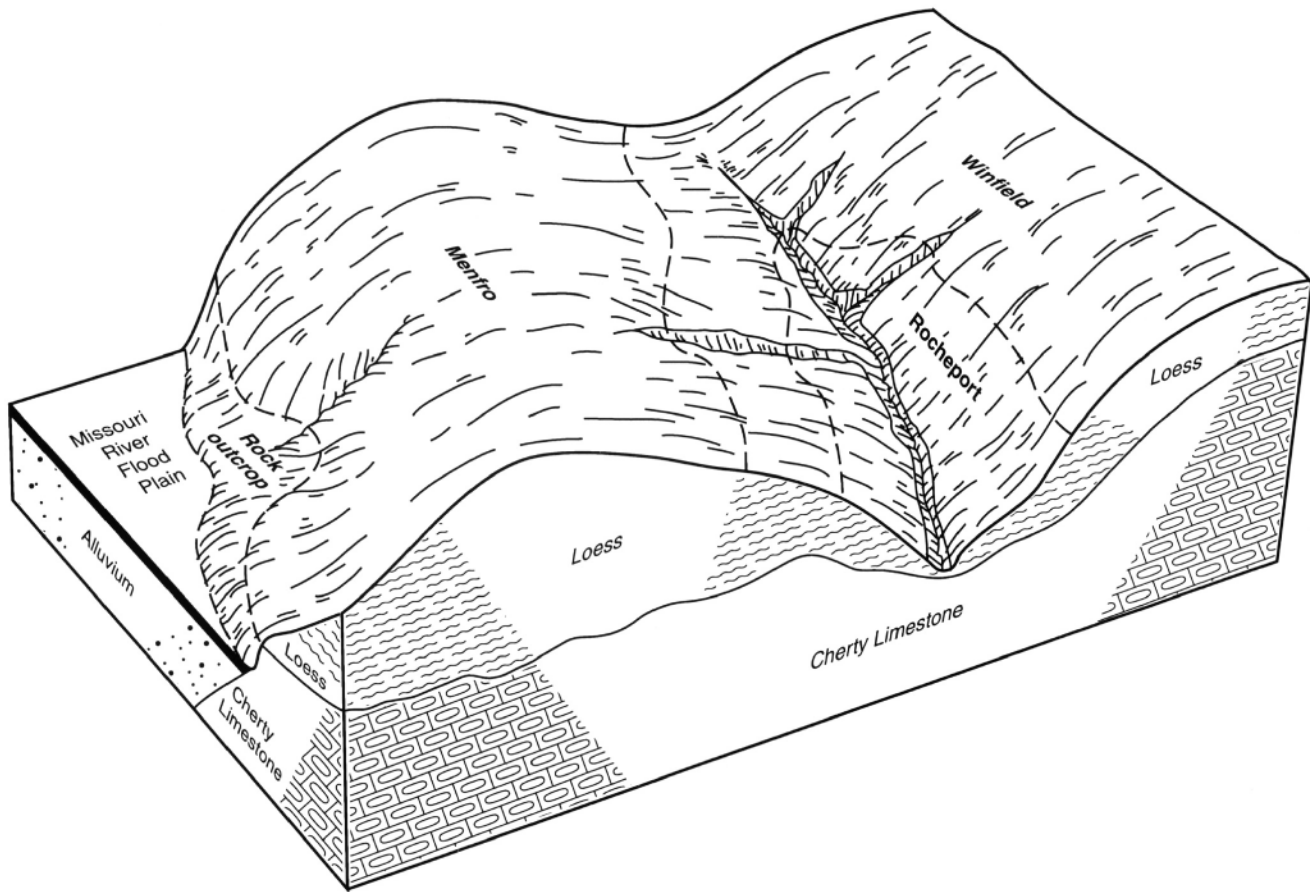


Figure 7.—Typical pattern of soils and parent material in the Menfro-Winfield-Rochepoint association.

Minor Components

- Cedargap and Haymond soils on flood plains
- Rock outcrop on side slopes
- Freeburg and Jemerson soils on stream terraces
- Weller soils on summits

Component Description

Menfro

Position on the landform: Shoulders and backslopes

Parent material: Fine-silty loess

Slope class: Moderately sloping to very steep

Winfield

Position on the landform: Shoulders and backslopes

Parent material: Fine-silty loess

Slope class: Moderately sloping to very steep

Rochepoint

Position on the landform: Backslopes

Parent material: Fine-silty loess and/or clayey residuum

Slope class: Moderately steep to very steep

7. Haynie-Blake-Darwin-Leta Association

Setting

Landscape: River valleys

Landform: Flood plains and flood-plain steps

Slope range: 0 to 2 percent

Composition

Extent of the association in the survey area: 4 percent

Extent of the soils in the association (fig. 8):

Haynie and similar soils—33 percent

Blake and similar soils—22 percent

Darwin and similar soils—17 percent

Leta and similar soils—16 percent

Minor components—12 percent

Minor Components

- Sarpy and Sandover soils on flood plains

Component Description

Haynie

Parent material: Alluvium

Slope class: Nearly level

Blake

Parent material: Silty alluvium

Slope class: Nearly level

Darwin

Parent material: Clayey alluvium

Slope class: Nearly level

Leta

Parent material: Clayey alluvium over loamy alluvium

Slope class: Nearly level

8. Wilbur-Moniteau-Perche-Haymond Association

Setting

Landscape: River valleys

Landform: Flood plains and flood-plain steps

Slope range: 0 to 3 percent

Composition

Extent of the association in the survey area: 8 percent

Extent of the soils in the association:

Wilbur and similar soils—31 percent

Moniteau and similar soils—23 percent

Perche and similar soils—17 percent

Haymond and similar soils—16 percent

Minor components—13 percent

Minor Components

- Tanglenook, Freeburg, and Jemerson soils on stream terraces

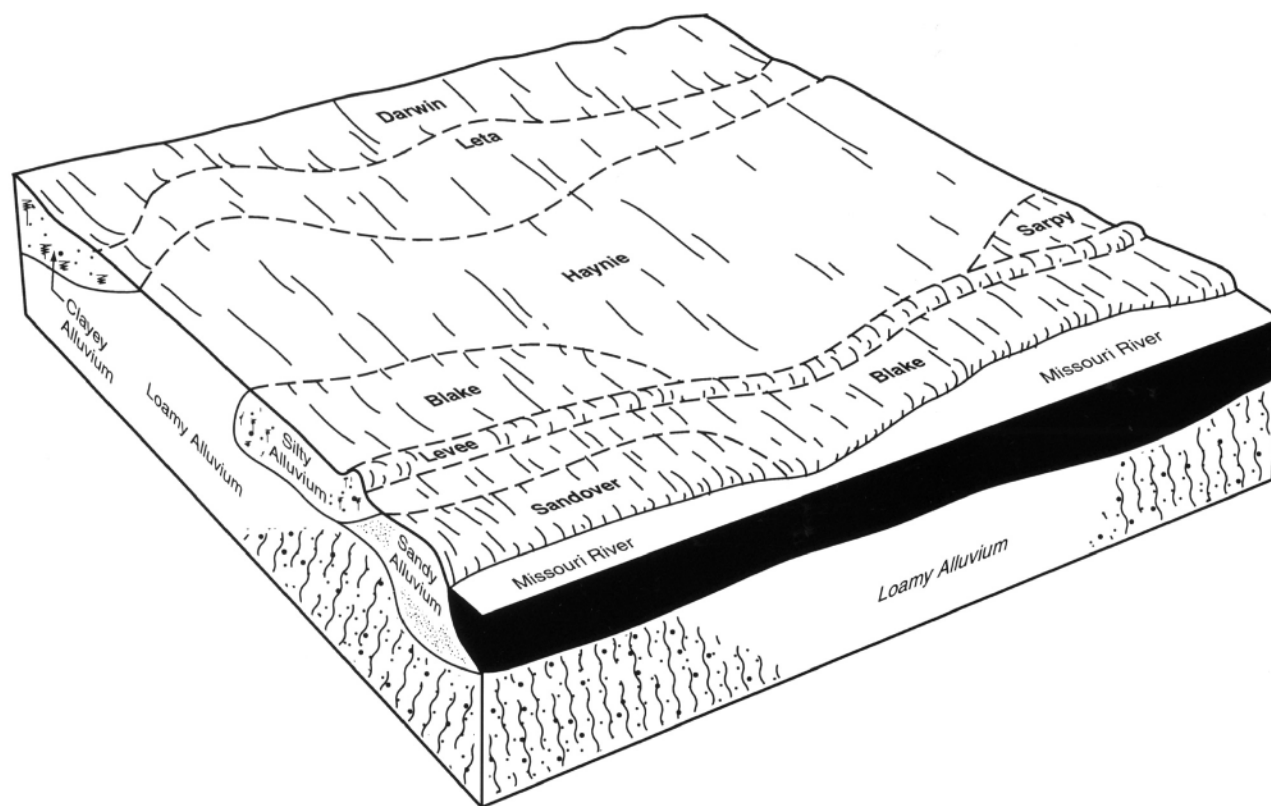


Figure 8.—Typical pattern of soils and parent material in the Haynie-Blake-Darwin-Leta association.

- Cedargap and Dameron soils on flood plains

Component Description**Wilbur**

Parent material: Coarse-silty alluvium

Slope class: Nearly level

Moniteau

Parent material: Fine-silty alluvium

Slope class: Nearly level

Perche

Parent material: Coarse-loamy alluvium

Slope class: Nearly level

Haymond

Parent material: Coarse-silty alluvium

Slope class: Nearly level

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and provides information about soil properties that may need to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Keswick silt loam, 5 to 9 percent slopes, eroded, is a phase of the Keswick series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are called complexes. A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Bardley-Clinkenbeard complex, 20 to 45 percent slopes, very stony, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. The map unit Pits, quarries, is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see Contents) give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

50000—Adco silt loam, 0 to 2 percent slopes

Map Unit Setting

Landform: Ridges on uplands

Component Description

Adco

Percent of the map unit: 90 percent

Position on the landform: Summits

Parent material: Loess over pedisegment

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Very high

Depth to restrictive feature: Abrupt textural change—9 to 18 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: 12 to 30 inches

Drainage class: Somewhat poorly drained

Typical Profile

Ap—0 to 9 inches; silt loam

E—9 to 16 inches; silt loam

Btg1—16 to 28 inches; silty clay

Btg2—28 to 49 inches; silty clay

2BCg—49 to 60 inches; silty clay loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components

Putnam and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

Landform: Interfluvies on till plains

Mexico and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 1 to 3 percent

Landform: Interfluvies on hills

50001—Armstrong loam, 5 to 9 percent slopes, eroded

Map Unit Setting

Landform: Hills on uplands

Component Description

Armstrong

Percent of the map unit: 80 percent

Position on the landform: Backslopes

Parent material: Loess over till

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Very high

Component Hydrologic Properties

Flooding: None

Current depth to water table: 12 to 36 inches

Drainage class: Somewhat poorly drained

Typical Profile

Ap—0 to 5 inches; loam

2Bt1—5 to 11 inches; clay loam

2Bt2—11 to 31 inches; clay

2Btg—31 to 70 inches; clay loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components

Keswick and similar soils

Estimated percent of the map unit: 0 to 15 percent

Slope range: 5 to 9 percent

Landform: Backslopes on hills

Leonard and similar soils

Estimated percent of the map unit: 0 to 10 percent

Slope range: 2 to 6 percent

Landform: Head slopes on till plains

50002—Keswick-Urban land complex, 5 to 9 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Keswick

Percent of the map unit: 50 percent

Parent material: Loess over clayey till
Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Runoff rate: Very high

Component Hydrologic Properties

Flooding: None
Current depth to water table: 12 to 36 inches
Drainage class: Moderately well drained

Typical Profile

Ap—0 to 7 inches; silt loam
 2Bt—7 to 20 inches; clay
 2Btg—20 to 60 inches; clay loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Urban land (fig. 9)

Percent of the map unit: 40 percent

Minor Components

Leonard and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 2 to 6 percent
Landform: Head slopes on till plains

Armstrong and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 5 to 9 percent

50003—Mexico silt loam, 1 to 3 percent slopes

Map Unit Setting

Landform: Ridges on uplands

Component Description

Mexico

Percent of the map unit: 80 percent
Position on the landform: Summits
Parent material: Loess over pedisegment
Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Runoff rate: Very high

Depth to restrictive feature: Abrupt textural change—6 to 14 inches

Component Hydrologic Properties

Flooding: None
Current depth to water table: 12 to 30 inches
Drainage class: Somewhat poorly drained

Typical Profile

Ap—0 to 7 inches; silt loam
 E—7 to 10 inches; silt loam
 BE—10 to 13 inches; silty clay loam
 Btg—13 to 27 inches; silty clay
 2Btg—27 to 60 inches; silty clay loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Putnam and similar soils

Estimated percent of the map unit: 0 to 10 percent
Slope range: 0 to 2 percent
Landform: Interfluvies on till plains

Adco and similar soils

Estimated percent of the map unit: 0 to 8 percent
Slope range: 0 to 2 percent
Landform: Interfluvies on uplands

Leonard and similar soils

Estimated percent of the map unit: 0 to 2 percent
Slope range: 2 to 6 percent
Landform: Head slopes on till plains

50004—Mexico silt loam, 1 to 3 percent slopes, eroded

Map Unit Setting

Landform: Ridges on uplands

Component Description

Mexico

Percent of the map unit: 80 percent
Position on the landform: Summits
Parent material: Loess over pedisegment
Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)



Figure 9.—Residential development in an area of Keswick-Urban land complex, 5 to 9 percent slopes.

Runoff rate: Very high

Depth to restrictive feature: Abrupt textural change—6 to 14 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: 12 to 30 inches

Drainage class: Somewhat poorly drained

Typical Profile

Ap—0 to 7 inches; silt loam

Btg1—7 to 22 inches; silty clay

Btg2—22 to 41 inches; silty clay loam

2BC—41 to 60 inches; silt loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Leonard and similar soils

Estimated percent of the map unit: 0 to 10 percent

Slope range: 2 to 6 percent

Landform: Head slopes on till plains

Mexico silty clay loam and similar soils

Estimated percent of the map unit: 0 to 8 percent

Slope range: 1 to 5 percent

Landform: Interfluvies on hills

Armstrong and similar soils

Estimated percent of the map unit: 0 to 2 percent

Slope range: 1 to 5 percent

50005—Mexico-Urban land complex, 1 to 3 percent slopes

Map Unit Setting

Landform: Ridges on uplands

Component Description

Mexico

Percent of the map unit: 50 percent

Parent material: Loess over pedis sediment

Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Very high

Depth to restrictive feature: Abrupt textural change—6 to 14 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: 12 to 30 inches

Drainage class: Somewhat poorly drained

Typical Profile

Ap—0 to 7 inches; silt loam

E—7 to 10 inches; silt loam

BE—10 to 13 inches; silty clay loam

Btg—13 to 27 inches; silty clay

2Btg—27 to 60 inches; silty clay loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Urban land

Percent of the map unit: 40 percent

Minor Components

Keswick and similar soils

Estimated percent of the map unit: 0 to 6 percent

Slope range: 5 to 9 percent

Landform: Backslopes on hills

Putnam and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

Landform: Interfluves on till plains

Leonard and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 2 to 6 percent

Landform: Head slopes on till plains

50006—Vanmeter clay loam, 5 to 14 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Vanmeter

Percent of the map unit: 85 percent

Position on the landform: Backslopes

Parent material: Residuum derived from clayey shale

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Moderately deep (20 to 40 inches)

Runoff rate: Very high

Depth to restrictive feature: Bedrock (paralithic)—20 to 40 inches; bedrock (lithic)—30 to 80 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Moderately well drained

Typical Profile

A1—0 to 5 inches; clay loam

A2—5 to 12 inches; clay loam

Bw—12 to 23 inches; silty clay

Cr—23 to 32 inches; weathered bedrock

R—32 to 35 inches; unweathered bedrock

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Winnegan and similar soils

Estimated percent of the map unit: 0 to 10 percent

Slope range: 14 to 20 percent

Landform: Backslopes on hills

Vanmeter, flaggy, and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 5 to 14 percent

Landform: Side slopes on hills

50007—Vanmeter silty clay, 14 to 40 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Vanmeter

Percent of the map unit: 80 percent

Position on the landform: Backslopes

Parent material: Residuum derived from clayey shale

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Moderately deep (20 to 40 inches)

Runoff rate: Very high

Depth to restrictive feature: Bedrock (paralithic)—20 to 40 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Moderately well drained

Typical Profile

A—0 to 3 inches; silty clay

Bw1—3 to 20 inches; clay

Bw2—20 to 32 inches; silty clay loam

Cr—32 to 60 inches; weathered bedrock

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Winnegan and similar soils

Estimated percent of the map unit: 0 to 15 percent

Slope range: 14 to 20 percent

Landform: Backslopes on hills

Vanmeter silt loam and similar soils

Estimated percent of the map unit: 0 to 10 percent

Slope range: 14 to 40 percent

Landform: Side slopes on hills

50008—Keswick silt loam, 5 to 9 percent slopes, eroded

Map Unit Setting

Landform: Hills on uplands

Component Description

Keswick

Percent of the map unit: 75 percent

Parent material: Loess over clayey till

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Very high

Component Hydrologic Properties

Flooding: None

Current depth to water table: 12 to 36 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 7 inches; silt loam

2Bt—7 to 20 inches; clay

2Btg—20 to 60 inches; clay loam

Detailed descriptions of specific horizons are

available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Armstrong and similar soils

Estimated percent of the map unit: 0 to 10 percent

Slope range: 5 to 9 percent

Keswick silty clay loam and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 5 to 9 percent

Landform: Backslopes on hills

Leonard and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 2 to 6 percent

Landform: Head slopes on till plains

Winnegan and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 14 to 20 percent

Landform: Backslopes on hills

50009—Keswick silt loam, 9 to 14 percent slopes, eroded

Map Unit Setting

Landform: Hills on uplands

Component Description

Keswick

Percent of the map unit: 85 percent

Position on the landform: Backslopes

Parent material: Loess over clayey till

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Very high

Component Hydrologic Properties

Flooding: None

Current depth to water table: 12 to 36 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 4 inches; silt loam

2Bt—4 to 53 inches; clay loam

2BC—53 to 60 inches; clay loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Armstrong and similar soils

Estimated percent of the map unit: 0 to 10 percent
Slope range: 5 to 9 percent

Winnegan and similar soils

Estimated percent of the map unit: 0 to 10 percent
Slope range: 14 to 20 percent
Landform: Backslopes on hills

Leonard and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 2 to 6 percent
Landform: Head slopes on till plains

50010—Winnegan loam, 14 to 20 percent slopes, eroded

Map Unit Setting

Landform: Hills on uplands

Component Description

Winnegan

Percent of the map unit: 90 percent
Position on the landform: Backslopes
Parent material: Clayey till
Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Runoff rate: Very high

Component Hydrologic Properties

Flooding: None
Current depth to water table: 24 to 42 inches
Drainage class: Moderately well drained

Typical Profile

A—0 to 5 inches; loam
 Bt—5 to 26 inches; clay loam
 Btk—26 to 45 inches; clay loam
 BC—45 to 70 inches; loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components

Vanmeter and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 5 to 14 percent
Landform: Side slopes on hills

Perche and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 0 to 3 percent
Landform: Flood plains

50011—Winnegan loam, 20 to 35 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Winnegan

Percent of the map unit: 90 percent
Position on the landform: Backslopes
Parent material: Clayey till
Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Runoff rate: Very high

Component Hydrologic Properties

Flooding: None
Current depth to water table: 24 to 42 inches
Drainage class: Moderately well drained

Typical Profile

A—0 to 2 inches; loam
 E—2 to 7 inches; loam
 Bt—7 to 37 inches; clay loam
 Btk—37 to 60 inches; clay loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components

Perche and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 0 to 3 percent
Landform: Flood plains

Bardley and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 20 to 45 percent
Landform: Side slopes on hills

50012—Putnam silt loam, 0 to 1 percent slopes

Map Unit Setting

Landform: Ridges on uplands

Component Description

Putnam

Percent of the map unit: 90 percent

Position on the landform: Summits

Parent material: Clayey loess

Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: High

Depth to restrictive feature: Abrupt textural change—
10 to 20 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: 6 to 18 inches

Drainage class: Poorly drained

Typical Profile

Ap—0 to 9 inches; silt loam

E—9 to 14 inches; silt loam

Btg1—14 to 30 inches; silty clay

Btg2—30 to 60 inches; silty clay loam

Cg—60 to 72 inches; silty clay loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Mexico and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 1 to 3 percent

Landform: Interfluvies on hills

Adco and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

Landform: Interfluvies on uplands

60003—Menfro silt loam, 9 to 14 percent slopes, eroded

Map Unit Setting

Landform: Hills on uplands

Component Description

Menfro

Percent of the map unit: 85 percent

Position on the landform: Backslopes

Parent material: Fine-silty loess

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Medium

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

Ap—0 to 4 inches; silt loam

BE—4 to 9 inches; silt loam

Bt1—9 to 35 inches; silty clay loam

Bt2—35 to 60 inches; silt loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Winfield and similar soils

Estimated percent of the map unit: 0 to 10 percent

Slope range: 9 to 14 percent

Landform: Side slopes on hills

Menfro silty clay loam and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 9 to 14 percent

Landform: Summits on hills

60008—Menfro silt loam, 20 to 45 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Menfro

Percent of the map unit: 85 percent

Position on the landform: Backslopes

Parent material: Fine-silty loess

Slope shape: Convex

Component Properties and Qualities*Depth to bedrock:* Very deep (more than 60 inches)*Runoff rate:* High**Component Hydrologic Properties***Flooding:* None*Current depth to water table:* More than 6 feet*Drainage class:* Well drained**Typical Profile**

A—0 to 3 inches; silt loam

E—3 to 11 inches; silt loam

Bt1—11 to 40 inches; silty clay loam

Bt2—40 to 80 inches; silt loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components**Clinkenbeard and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 35 to 70 percent*Landform:* Backslopes on hills**Rocheport and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 25 to 40 percent*Landform:* Backslopes on hills**Bonnefemme and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 25 to 40 percent*Landform:* Backslopes on hills

**60009—Clinkenbeard-Gasconade-Rock
outcrop complex, 35 to 70 percent
slopes, extremely stony**

Map Unit Setting*Landform:* Hills on uplands (fig. 10)**Component Description****Clinkenbeard***Percent of the map unit:* 45 percent*Position on the landform:* Backslopes*Parent material:* Clayey colluvium derived from limestone*Slope shape:* Convex**Component Properties and Qualities***Depth to bedrock:* Moderately deep (20 to 40 inches)*Runoff rate:* Very high*Surface features:* 1 to 3 percent of the surface is covered by angular flagstones.*Depth to restrictive feature:* Bedrock (lithic)—20 to 40 inches**Component Hydrologic Properties***Flooding:* None*Current depth to water table:* More than 6 feet*Drainage class:* Well drained**Typical Profile**

A—0 to 4 inches; very flaggy clay loam

AB—4 to 10 inches; very flaggy silty clay loam

Bt—10 to 24 inches; very flaggy silty clay

R—24 to 80 inches; unweathered bedrock

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Gasconade*Percent of the map unit:* 30 percent*Position on the landform:* Backslopes*Parent material:* Gravelly residuum derived from limestone*Slope shape:* Convex**Component Properties and Qualities***Depth to bedrock:* Shallow (10 to 20 inches)*Runoff rate:* Very high*Surface features:* 1 to 3 percent of the surface is covered by angular flagstones.*Depth to restrictive feature:* Bedrock (lithic)—10 to 20 inches**Component Hydrologic Properties***Flooding:* None*Current depth to water table:* More than 6 feet*Drainage class:* Somewhat excessively drained**Typical Profile**

A1—0 to 2 inches; very flaggy clay loam

A2—2 to 13 inches; extremely cobbly silty clay

R—13 to 80 inches; unweathered bedrock

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."



Figure 10.—Hardwoods in an area of Clinkenbeard-Gasconade-Rock outcrop complex, 35 to 70 percent slopes, extremely stony.

Rock outcrop

Percent of the map unit: 15 percent

Minor Components

Clinkenbeard silt loam and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 35 to 70 percent

Landform: Backslopes on hills

Dameron and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 3 percent

60010—Arisburg silt loam, 1 to 3 percent slopes

Map Unit Setting

Landform: Ridges on uplands

Component Description

Arisburg

Percent of the map unit: 95 percent

Position on the landform: Summits

Parent material: Loess

Slope shape: Linear

Component Properties and Qualities*Depth to bedrock:* Very deep (more than 60 inches)*Runoff rate:* Medium**Component Hydrologic Properties***Flooding:* None*Current depth to water table:* 18 to 30 inches*Drainage class:* Somewhat poorly drained**Typical Profile**

Ap—0 to 7 inches; silt loam

AB—7 to 11 inches; silt loam

Bt—11 to 15 inches; silty clay loam

Btg—15 to 60 inches; silty clay loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components**Weller and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 2 to 5 percent*Landform:* Interfluves on hills**60011—Arisburg silt loam, 3 to 6 percent slopes, eroded****Map Unit Setting***Landform:* Ridges on uplands (fig. 11)**Component Description****Arisburg***Percent of the map unit:* 85 percent*Position on the landform:* Shoulders*Parent material:* Loess*Slope shape:* Convex**Component Properties and Qualities***Depth to bedrock:* Very deep (more than 60 inches)*Runoff rate:* Medium**Component Hydrologic Properties***Flooding:* None*Current depth to water table:* 18 to 30 inches*Drainage class:* Somewhat poorly drained**Typical Profile**

Ap—0 to 7 inches; silt loam

Bt—7 to 16 inches; silty clay loam

Btg—16 to 57 inches; silty clay loam

BCg—57 to 70 inches; silty clay loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components**Armstrong and similar soils***Estimated percent of the map unit:* 0 to 10 percent*Slope range:* 5 to 9 percent**Arisburg silty clay loam and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 3 to 6 percent*Landform:* Interfluves on hills**60012—Bardley-Clinkenbeard complex, 20 to 45 percent slopes, very stony****Map Unit Setting***Landform:* Hills on uplands**Component Description****Bardley***Percent of the map unit:* 65 percent*Position on the landform:* Backslopes

Parent material: Colluvium over clayey residuum derived from cherty limestone

Slope shape: Convex**Component Properties and Qualities***Depth to bedrock:* Moderately deep (20 to 40 inches)*Runoff rate:* Very high

Surface features: 0.10 to 3.0 percent of the surface is covered by angular stones.

Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches

Component Hydrologic Properties*Flooding:* None*Current depth to water table:* More than 6 feet*Drainage class:* Well drained**Typical Profile**

A—0 to 3 inches; cobbly silt loam

E—3 to 9 inches; gravelly silt loam

2Bt—9 to 36 inches; cobbly clay

2R—36 to 80 inches; unweathered bedrock

Detailed descriptions of specific horizons are



Figure 11.—Terraces with underground outlets in an area of Arisburg silt loam, 3 to 6 percent slopes, eroded.

available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Clinkenbeard

Percent of the map unit: 23 percent

Parent material: Clayey colluvium derived from limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Moderately deep (20 to 40 inches)

Runoff rate: Very high

Surface features: 0.10 to 3.0 percent of the surface is covered by angular flagstones.

Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

A—0 to 3 inches; very cobbly silty clay

AB—3 to 8 inches; very cobbly silty clay

Bt—8 to 25 inches; very cobbly silty clay

R—25 to 80 inches; unweathered bedrock

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Cedargap and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 0 to 3 percent

Rocheport and similar soils

Estimated percent of the map unit: 0 to 3 percent
Slope range: 25 to 40 percent
Landform: Backslopes on hills

Rock outcrop

Percent of the map unit: 0 to 2 percent

Bonnefemme and similar soils

Estimated percent of the map unit: 0 to 2 percent
Slope range: 25 to 40 percent
Landform: Backslopes on hills

60019—Hatton silt loam, 2 to 5 percent slopes, eroded

Map Unit Setting

Landform: Hills on uplands (fig. 12)

Component Description

Hatton

Percent of the map unit: 85 percent
Position on the landform: Shoulders
Parent material: Loess over fine-silty pedisegment
Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Runoff rate: High

Component Hydrologic Properties

Flooding: None
Current depth to water table: 24 to 36 inches
Drainage class: Moderately well drained

Typical Profile

Ap—0 to 3 inches; silt loam
 E—3 to 6 inches; silt
 Bt—6 to 32 inches; silty clay
 2Btx—32 to 48 inches; silty clay loam
 2Bt—48 to 60 inches; silt loam

Detailed descriptions of specific horizons are

available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Weller and similar soils

Estimated percent of the map unit: 0 to 10 percent
Slope range: 2 to 5 percent
Landform: Base slopes on benches

Marion and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 1 to 3 percent
Landform: Interfluvies on hills

60020—Lenzburg silty clay loam, 2 to 9 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Lenzburg

Percent of the map unit: 90 percent
Position on the landform: Summits
Parent material: Fine-loamy mine spoil or earthy fill derived from calcareous shale
Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Runoff rate: High

Component Hydrologic Properties

Flooding: None
Current depth to water table: More than 6 feet
Drainage class: Well drained

Typical Profile

A—0 to 3 inches; silty clay loam
 C1—3 to 14 inches; gravelly silt loam
 C2—14 to 60 inches; gravelly silty clay loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Acid shale and coal

Percent of the map unit: 0 to 10 percent



Figure 12.—Cool-season grass hay in an area of Hatton silt loam, 2 to 5 percent slopes, eroded.

60021—Lenzburg channery silty clay loam, 9 to 70 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Lenzburg

Percent of the map unit: 90 percent

Position on the landform: Backslopes

Parent material: Fine-loamy mine spoil or earthy fill derived from calcareous shale (fig. 13)

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Very high

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

A—0 to 5 inches; channery silty clay loam

C1—5 to 34 inches; gravelly silty clay loam

C2—34 to 50 inches; cobbly silty clay loam

C3—50 to 60 inches; silty clay loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Acid shale and coal

Percent of the map unit: 0 to 5 percent

Ponds in abandoned pits

Percent of the map unit: 0 to 5 percent

Landform: Lakes

60022—Leonard silt loam, 2 to 6 percent slopes, eroded

Map Unit Setting

Landform: Ridges on uplands

Component Description

Leonard

Percent of the map unit: 80 percent

Position on the landform: Shoulders



Figure 13.—Cedars and hardwoods growing around a strip pit in an area of Lenzburg channery silty clay loam, 9 to 70 percent slopes.

Parent material: Fine-silty loess over till

Slope shape: Concave

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: High

Component Hydrologic Properties

Flooding: None

Current depth to water table: 6 to 18 inches

Drainage class: Poorly drained

Typical Profile

Ap—0 to 8 inches; silt loam

Btg—8 to 26 inches; silty clay

2Btg—26 to 60 inches; silty clay loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Keswick and similar soils

Estimated percent of the map unit: 0 to 15 percent

Slope range: 5 to 9 percent

Landform: Backslopes on hills

Auxvasse and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 3 percent

Landform: Treads on stream terraces

60023—Marion silt loam, 1 to 3 percent slopes

Map Unit Setting

Landform: Ridges on uplands

Component Description

Marion

Percent of the map unit: 90 percent

Position on the landform: Summits

Parent material: Clayey loess

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Very high

Depth to restrictive feature: Abrupt textural change—5 to 18 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: 12 to 24 inches

Drainage class: Somewhat poorly drained

Typical Profile

A—0 to 3 inches; silt loam

E—3 to 11 inches; silt loam

Bt—11 to 27 inches; silty clay

Btg—27 to 60 inches; silty clay loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Weller and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 2 to 5 percent

Landform: Interfluves on hills

Hatton and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 2 to 5 percent

Landform: Interfluves on hills

60024—Menfro silt loam, 3 to 9 percent slopes, eroded

Map Unit Setting

Landform: Hills on uplands

Component Description

Menfro

Percent of the map unit: 85 percent

Position on the landform: Shoulders

Parent material: Fine-silty loess

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Medium

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

Ap—0 to 7 inches; silt loam

BE—7 to 11 inches; silt loam

Bt1—11 to 33 inches; silty clay loam

Bt2—33 to 60 inches; silty clay loam

Detailed descriptions of specific horizons are

available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Winfield and similar soils

Estimated percent of the map unit: 0 to 10 percent
Slope range: 5 to 9 percent
Landform: Summits on hills

Menfro silty clay loam and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 3 to 9 percent
Landform: Summits on hills

60025—Urban land-Harvester complex, 2 to 9 percent slopes

Map Unit Setting

Landform: Ridges on uplands

Component Description

Urban land

Percent of the map unit: 60 percent

Harvester

Percent of the map unit: 35 percent
Position on the landform: Summits
Parent material: Fine-silty loess
Slope shape: Concave

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Runoff rate: High

Component Hydrologic Properties

Flooding: None
Current depth to water table: More than 6 feet
Drainage class: Moderately well drained

Typical Profile

C1—0 to 6 inches; silty clay loam
 C2—6 to 30 inches; silty clay loam
 2C3—30 to 60 inches; clay loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Keswick and similar soils

Estimated percent of the map unit: 0 to 3 percent

Slope range: 5 to 9 percent
Landform: Backslopes on hills

Mexico and similar soils

Estimated percent of the map unit: 0 to 2 percent
Slope range: 1 to 3 percent
Landform: Interfluves on hills

60026—Weller silt loam, bench, 2 to 5 percent slopes

Map Unit Setting

Landform: Benches on uplands (fig. 14)

Component Description

Weller

Percent of the map unit: 85 percent
Parent material: Loess
Slope shape: Concave

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Runoff rate: High
Depth to restrictive feature: Abrupt textural change—6 to 14 inches

Component Hydrologic Properties

Flooding: None
Current depth to water table: 24 to 48 inches
Drainage class: Moderately well drained

Typical Profile

Ap—0 to 8 inches; silt loam
 Bt—8 to 16 inches; silty clay
 Btg1—16 to 54 inches; silty clay loam
 2Btg2—54 to 60 inches; silt loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Auxvasse and similar soils

Estimated percent of the map unit: 0 to 10 percent
Slope range: 0 to 3 percent
Landform: Treads on stream terraces

Winfield and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 2 to 5 percent
Landform: Summits on hills



Figure 14.—Cool-season grass pasture in an area of Weller silt loam, bench, 2 to 5 percent slopes.

60027—Weller silt loam, 2 to 5 percent slopes, eroded

Map Unit Setting

Landform: Ridges on uplands

Component Description

Weller

Percent of the map unit: 85 percent

Position on the landform: Summits

Parent material: Loess

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: High

Depth to restrictive feature: Abrupt textural change—6 to 14 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: 24 to 48 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 8 inches; silt loam

BE—8 to 13 inches; silt loam

Bt—13 to 25 inches; silty clay

Btg—25 to 60 inches; silty clay loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Marion and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 1 to 3 percent

Landform: Interfluvies on hills

Winfield and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 2 to 5 percent

Landform: Summits on hills

Mexico and similar soils*Estimated percent of the map unit: 0 to 5 percent**Slope range: 1 to 3 percent**Landform: Interfluves on hills***60028—Weller silt loam, 5 to 9 percent slopes, eroded****Map Unit Setting***Landform: Ridges on uplands***Component Description****Weller***Percent of the map unit: 85 percent**Position on the landform: Shoulders**Parent material: Loess**Slope shape: Convex***Component Properties and Qualities***Depth to bedrock: Very deep (more than 60 inches)**Runoff rate: Very high**Depth to restrictive feature: Abrupt textural change—
10 to 20 inches***Component Hydrologic Properties***Flooding: None**Current depth to water table: 24 to 48 inches**Drainage class: Moderately well drained***Typical Profile***Ap—0 to 7 inches; silt loam**BE—7 to 13 inches; silt loam**Bt—13 to 47 inches; silty clay**Btg—47 to 80 inches; silt loam*

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components**Keswick and similar soils***Estimated percent of the map unit: 0 to 10 percent**Slope range: 5 to 9 percent**Landform: Backslopes on hills***Auxvasse and similar soils***Estimated percent of the map unit: 0 to 5 percent**Slope range: 0 to 3 percent**Landform: Treads on stream terraces***60029—Weller-Urban land complex, 2 to 9 percent slopes****Map Unit Setting***Landform: Ridges on uplands***Component Description****Weller***Percent of the map unit: 50 percent**Position on the landform: Shoulders**Parent material: Loess**Slope shape: Convex***Component Properties and Qualities***Depth to bedrock: Very deep (more than 60 inches)**Runoff rate: Very high**Depth to restrictive feature: Abrupt textural change—
10 to 20 inches***Component Hydrologic Properties***Flooding: None**Current depth to water table: 24 to 48 inches**Drainage class: Moderately well drained***Typical Profile***Ap—0 to 7 inches; silt loam**BE—7 to 13 inches; silt loam**Bt—13 to 47 inches; silty clay**Btg—47 to 80 inches; silt loam*

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Urban land*Percent of the map unit: 40 percent***Minor Components****Keswick and similar soils***Estimated percent of the map unit: 0 to 5 percent**Slope range: 5 to 9 percent**Landform: Backslopes on hills***Wrengart and similar soils***Estimated percent of the map unit: 0 to 5 percent**Slope range: 9 to 14 percent**Landform: Side slopes on hills*

60030—Winfield silt loam, 5 to 9 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Winfield

Percent of the map unit: 90 percent

Position on the landform: Shoulders

Parent material: Fine-silty loess

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Medium

Component Hydrologic Properties

Flooding: None

Current depth to water table: 24 to 42 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 6 inches; silt loam

E—6 to 14 inches; silt loam

Bt—14 to 30 inches; silty clay loam

Btg—30 to 54 inches; silty clay loam

Cg—54 to 72 inches; silt loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Weller and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 2 to 5 percent

Landform: Interfluvies on hills

Menfro and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 3 to 9 percent

Landform: Summits on hills

60031—Winfield silt loam, 9 to 14 percent slopes, eroded

Map Unit Setting

Landform: Hills on uplands

Component Description

Winfield

Percent of the map unit: 90 percent

Position on the landform: Backslopes

Parent material: Fine-silty loess

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Medium

Component Hydrologic Properties

Flooding: None

Current depth to water table: 24 to 42 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 6 inches; silt loam

BE—6 to 10 inches; silt loam

Bt—10 to 40 inches; silty clay loam

Btg—40 to 60 inches; silt loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Weller and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 5 to 9 percent

Landform: Side slopes on hills

Menfro and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 9 to 14 percent

Landform: Summits on hills

60032—Winfield silt loam, karst, 14 to 45 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Winfield

Percent of the map unit: 85 percent

Position on the landform: Backslopes

Parent material: Fine-silty loess

Slope shape: Convex

Component Properties and Qualities*Depth to bedrock:* Very deep (more than 60 inches)*Runoff rate:* High**Component Hydrologic Properties***Flooding:* None*Current depth to water table:* 24 to 42 inches*Drainage class:* Moderately well drained**Typical Profile**

A—0 to 5 inches; silt loam

BE—5 to 11 inches; silt loam

Bt1—11 to 26 inches; silt loam

Bt2—26 to 60 inches; silty clay loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components**Weller and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 5 to 9 percent*Landform:* Side slopes on hills**Menfro and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 20 to 45 percent*Landform:* Backslopes on hills**Bonnefemme and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 25 to 40 percent*Landform:* Backslopes on hills**60033—Wrengart silt loam, 5 to 9 percent slopes, eroded****Map Unit Setting***Landform:* Hills on uplands**Component Description****Wrengart***Percent of the map unit:* 85 percent*Position on the landform:* Shoulders*Parent material:* Fine-silty loess over gravelly residuum derived from cherty limestone*Slope shape:* Convex**Component Properties and Qualities***Depth to bedrock:* Very deep (more than 60 inches)*Runoff rate:* Medium*Depth to restrictive feature:* Dense material—20 to 40 inches**Component Hydrologic Properties***Flooding:* None*Current depth to water table:* 24 to 42 inches*Drainage class:* Moderately well drained**Typical Profile**

Ap—0 to 5 inches; silt loam

BE—5 to 11 inches; silt loam

Bt—11 to 34 inches; silty clay loam

2Btx—34 to 57 inches; silty clay loam

3Bt—57 to 72 inches; extremely gravelly silt loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components**Weller and similar soils***Estimated percent of the map unit:* 0 to 10 percent*Slope range:* 2 to 5 percent*Landform:* Interfluves on hills**Winfield and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 5 to 9 percent*Landform:* Summits on hills**60034—Wrengart silty clay loam, karst, 5 to 14 percent slopes, eroded****Map Unit Setting***Landform:* Hills on uplands**Component Description****Wrengart***Percent of the map unit:* 85 percent*Position on the landform:* Backslopes*Parent material:* Fine-silty loess over gravelly residuum derived from cherty limestone*Slope shape:* Concave (fig. 15)**Component Properties and Qualities***Depth to bedrock:* Very deep (more than 60 inches)*Runoff rate:* High*Depth to restrictive feature:* Dense material—20 to 40 inches**Component Hydrologic Properties***Flooding:* None*Current depth to water table:* 24 to 42 inches



Figure 15.—Sinkholes in an area of Wrengart silty clay loam, karst, 5 to 14 percent slopes, eroded.

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 7 inches; silty clay loam
 Bt—7 to 24 inches; silty clay loam
 2Btx—24 to 60 inches; silt loam
 3Bt—60 to 80 inches; gravelly clay

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Winnegan and similar soils

Estimated percent of the map unit: 0 to 10 percent

Slope range: 14 to 20 percent

Landform: Backslopes on hills

Weller and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 5 to 9 percent

Landform: Side slopes on hills

Rock outcrop

Percent of the map unit: 0 to 1 percent

60035—Wrengart-Urban land complex, 9 to 14 percent slopes***Map Unit Setting***

Landform: Hills on uplands

Component Description**Wrengart**

Percent of the map unit: 50 percent

Position on the landform: Backslopes

Parent material: Fine-silty loess over gravelly residuum derived from cherty limestone

Slope shape: Concave

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: High

Depth to restrictive feature: Dense material—20 to 40 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: 24 to 42 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 7 inches; silty clay loam

Bt—7 to 24 inches; silty clay loam

2Btx—24 to 60 inches; silt loam

3Bt—60 to 80 inches; gravelly clay

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Urban land

Percent of the map unit: 35 percent

Minor Components**Bardley and similar soils**

Estimated percent of the map unit: 0 to 10 percent

Slope range: 20 to 45 percent

Landform: Side slopes on hills

Weller and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 5 to 9 percent

Landform: Side slopes on hills

60036—Menfro silt loam, 14 to 20 percent slopes, eroded***Map Unit Setting***

Landform: Hills on uplands

Component Description**Menfro**

Percent of the map unit: 85 percent

Position on the landform: Backslopes

Parent material: Fine-silty loess

Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Medium

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

Ap—0 to 3 inches; silt loam

Bt1—3 to 45 inches; silty clay loam

Bt2—45 to 80 inches; silt loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components**Menfro silty clay loam and similar soils**

Estimated percent of the map unit: 0 to 5 percent

Slope range: 14 to 20 percent

Landform: Side slopes on hills

Rocheport and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 14 to 25 percent

Landform: Backslopes on hills

Bonnefemme and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 14 to 25 percent

Landform: Backslopes on hills

60037—Wrengart silt loam, 9 to 14 percent slopes***Map Unit Setting***

Landform: Hills on uplands

Component Description

Wrengart

Percent of the map unit: 90 percent

Position on the landform: Backslopes

Parent material: Fine-silty loess over gravelly residuum derived from cherty limestone

Slope shape: Concave

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: High

Depth to restrictive feature: Dense material—20 to 48 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: 24 to 42 inches

Drainage class: Moderately well drained

Typical Profile

A—0 to 2 inches; silt loam

E—2 to 14 inches; silt loam

Bt—14 to 45 inches; silty clay loam

2Btx—45 to 54 inches; silty clay loam

3Bt—54 to 80 inches; very gravelly silt loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Wrengart silty clay loam and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 9 to 14 percent

Landform: Side slopes on hills

Bardley and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 20 to 45 percent

Landform: Side slopes on hills

60038—Rocheport-Bonnefemme complex, 14 to 25 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Rocheport

Percent of the map unit: 50 percent

Position on the landform: Backslopes

Parent material: Fine-silty loess and/or clayey residuum derived from limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Deep (40 to 60 inches)

Runoff rate: High

Depth to restrictive feature: Bedrock (paralithic)—40 to 60 inches; bedrock (lithic)—40 to 60 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: 30 to 48 inches

Drainage class: Moderately well drained

Typical Profile

A—0 to 1 inch; silt loam

E—1 to 5 inches; silt loam

Bt—5 to 30 inches; silty clay loam

2Bt—30 to 48 inches; clay

2Cr—48 to 52 inches; weathered bedrock

2R—52 to 80 inches; unweathered bedrock

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Bonnefemme

Percent of the map unit: 35 percent

Position on the landform: Backslopes

Parent material: Fine-silty loess over clayey residuum derived from limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Moderately deep (20 to 40 inches)

Runoff rate: Very high

Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

A—0 to 1 inch; silt loam

E—1 to 10 inches; silt loam

Bt1—10 to 17 inches; silty clay loam

2Bt2—17 to 28 inches; silty clay

2R—28 to 80 inches; unweathered bedrock

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Bardley and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 20 to 45 percent

Landform: Side slopes on hills

Gasconade and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 35 to 70 percent

Landform: Side slopes on hills

Menfro and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 9 to 14 percent

Landform: Summits on hills

60039—Rocheport-Bonnefemme complex, 25 to 40 percent slopes

Map Unit Setting

Landform: Hills on uplands

Component Description

Rocheport

Percent of the map unit: 50 percent

Position on the landform: Backslopes

Parent material: Fine-silty loess and/or clayey residuum derived from limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Deep (40 to 60 inches)

Runoff rate: Very high

Depth to restrictive feature: Bedrock (lithic)—40 to 60 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: 30 to 48 inches

Drainage class: Moderately well drained

Typical Profile

A—0 to 5 inches; silt loam

E—5 to 10 inches; silt loam

Bt—10 to 29 inches; silty clay loam

2Bt—29 to 46 inches; silty clay loam

2R—46 to 80 inches; unweathered bedrock

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Bonnefemme

Percent of the map unit: 35 percent

Position on the landform: Backslopes

Parent material: Fine-silty loess over clayey residuum derived from limestone

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Moderately deep (20 to 40 inches)

Runoff rate: Very high

Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches

Component Hydrologic Properties

Flooding: None

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

A—0 to 2 inches; silt loam

E—2 to 5 inches; silt loam

Bt1—5 to 29 inches; silty clay loam

2Bt2—29 to 39 inches; silty clay

2R—39 to 80 inches; unweathered bedrock

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components

Bardley and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 20 to 45 percent

Gasconade and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 35 to 70 percent

Menfro and similar soils

Estimated percent of the map unit: 0 to 3 percent

Slope range: 9 to 14 percent

Cedargap and similar soils

Estimated percent of the map unit: 0 to 2 percent

Slope range: 0 to 3 percent

64002—Freeburg silt loam, 2 to 5 percent slopes

Map Unit Setting

Landform: Stream terraces in river valleys

Component Description

Freeburg

Percent of the map unit: 80 percent

Parent material: Alluvium

Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Medium

Component Hydrologic Properties

Flooding: None

Current depth to water table: 12 to 30 inches

Drainage class: Somewhat poorly drained

Typical Profile

Ap—0 to 8 inches; silt loam

E—8 to 18 inches; silt loam

Bt—18 to 37 inches; silty clay loam

Btg—37 to 65 inches; silty clay loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components

Freeburg, rarely flooded, and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 1 to 3 percent

Moniteau and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 3 percent

Landform: Stream terraces

Tanglenook and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

Jemerson and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 3 percent

64004—Auxvasse silt loam, 0 to 2 percent slopes, rarely flooded

Map Unit Setting

Landform: Stream terraces in river valleys

Component Description

Auxvasse

Percent of the map unit: 80 percent

Parent material: Alluvium

Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Very high

Depth to restrictive feature: Abrupt textural change—
12 to 22 inches

Component Hydrologic Properties

Frequency of flooding: Rare

Current depth to water table: 12 to 24 inches

Drainage class: Somewhat poorly drained

Typical Profile

Ap—0 to 8 inches; silt loam

E—8 to 15 inches; silt loam

Btg1—15 to 26 inches; silty clay

Btg2—26 to 52 inches; silty clay loam

2Btg—52 to 72 inches; silty clay loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components

Tanglenook and similar soils

Estimated percent of the map unit: 0 to 10 percent

Slope range: 0 to 2 percent

Landform: Treads on stream terraces

Moniteau and similar soils

Estimated percent of the map unit: 0 to 10 percent

Slope range: 0 to 3 percent

Landform: Treads on stream terraces

64005—Moniteau silt loam, 0 to 3 percent slopes, occasionally flooded

Map Unit Setting

Landform: Flood-plain steps in river valleys

Component Description

Moniteau

Percent of the map unit: 90 percent

Parent material: Fine-silty alluvium

Slope shape: Concave

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Medium

Component Hydrologic Properties*Frequency of flooding:* Occasional*Current depth to water table:* 0 to 12 inches*Drainage class:* Poorly drained**Typical Profile**

Ap—0 to 8 inches; silt loam

E—8 to 17 inches; silt loam

Btg1—17 to 32 inches; silty clay loam

Btg2—32 to 65 inches; silt loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components**Auxvasse and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 0 to 3 percent*Landform:* Treads on stream terraces**Freeburg and similar soils***Estimated percent of the map unit:* 0 to 3 percent*Slope range:* 2 to 5 percent**Tanglenook and similar soils***Estimated percent of the map unit:* 0 to 2 percent*Slope range:* 0 to 2 percent*Landform:* Treads on stream terraces**64006—Tanglenook silt loam, 1 to 3 percent slopes, rarely flooded****Map Unit Setting***Landform:* Stream terraces in river valleys**Component Description****Tanglenook***Percent of the map unit:* 90 percent*Parent material:* Alluvium*Slope shape:* Concave**Component Properties and Qualities***Depth to bedrock:* Very deep (more than 60 inches)*Runoff rate:* High**Component Hydrologic Properties***Frequency of flooding:* Rare*Current depth to water table:* 0 to 18 inches*Drainage class:* Poorly drained**Typical Profile**

A—0 to 14 inches; silt loam

Btg1—14 to 24 inches; silty clay

Btg2—24 to 65 inches; silty clay loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components**Auxvasse and similar soils***Estimated percent of the map unit:* 0 to 10 percent*Slope range:* 0 to 3 percent*Landform:* Treads on stream terraces**66007—Leta silty clay, 0 to 2 percent slopes, occasionally flooded****Map Unit Setting***Landform:* Flood-plain steps in river valleys**Component Description****Leta***Percent of the map unit:* 85 percent*Parent material:* Clayey alluvium over loamy alluvium*Slope shape:* Linear**Component Properties and Qualities***Depth to bedrock:* Very deep (more than 60 inches)*Runoff rate:* Medium**Component Hydrologic Properties***Frequency of flooding:* Occasional*Current depth to water table:* 12 to 36 inches*Drainage class:* Somewhat poorly drained**Typical Profile**

Ap—0 to 22 inches; silty clay

Bg—22 to 30 inches; silty clay

2Cg1—30 to 44 inches; stratified very fine sandy loam to silt loam

2Cg2—44 to 72 inches; silt loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components**Darwin and similar soils***Estimated percent of the map unit:* 0 to 10 percent

Slope range: 0 to 2 percent

Landform: Flood plains

Blake and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

66014—Haymond silt loam, 0 to 3 percent slopes, frequently flooded

Map Unit Setting

Landform: Flood plains in river valleys

Component Description

Haymond

Percent of the map unit: 90 percent

Parent material: Coarse-silty alluvium

Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Negligible

Component Hydrologic Properties

Frequency of flooding: Frequent

Current depth to water table: More than 6 feet

Drainage class: Well drained

Typical Profile

A—0 to 7 inches; silt loam

Bw—7 to 22 inches; silt loam

C—22 to 80 inches; silt loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components

Perche and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 3 percent

Landform: Flood plains

Wilbur and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

Landform: Flood plains

66015—Blake silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

Landform: Flood plains in river valleys

Component Description

Blake

Percent of the map unit: 85 percent

Parent material: Silty alluvium

Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Negligible

Component Hydrologic Properties

Frequency of flooding: Occasional (fig. 16)

Current depth to water table: 24 to 48 inches

Drainage class: Somewhat poorly drained

Typical Profile

A—0 to 8 inches; silt loam

C1—8 to 40 inches; silt loam

C2—40 to 65 inches; silt loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components

Leta and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

Sandover and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

Landform: Flats on flood plains

Darwin and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

Landform: Flood plains

66016—Blake silty clay loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

Landform: Flood plains in river valleys



Figure 16.—Flooding in an area of Blake silt loam, 0 to 2 percent slopes, occasionally flooded.

Component Description

Blake

Percent of the map unit: 75 percent

Parent material: Silty alluvium

Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Negligible

Component Hydrologic Properties

Frequency of flooding: Frequent

Current depth to water table: 24 to 48 inches

Drainage class: Somewhat poorly drained

Typical Profile

A—0 to 3 inches; silty clay loam

C1—3 to 23 inches; silt loam

C2—23 to 60 inches; silt loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components

Haynie and similar soils

Estimated percent of the map unit: 0 to 15 percent
Slope range: 0 to 2 percent
Landform: Flood plains

Darwin and similar soils

Estimated percent of the map unit: 0 to 10 percent
Slope range: 0 to 2 percent
Landform: Flood plains

66017—Cedargap-Dameron complex, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

Landform: Flood plains in river valleys

Component Description

Cedargap

Percent of the map unit: 50 percent
Parent material: Gravelly alluvium
Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Runoff rate: Negligible

Component Hydrologic Properties

Frequency of flooding: Frequent
Current depth to water table: More than 6 feet
Drainage class: Well drained

Typical Profile

A—0 to 10 inches; silt loam
 2A—10 to 60 inches; very cobbly loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Dameron

Percent of the map unit: 40 percent
Parent material: Alluvium
Slope shape: Convex

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Negligible

Component Hydrologic Properties

Frequency of flooding: Frequent
Current depth to water table: More than 6 feet
Drainage class: Well drained

Typical Profile

A1—0 to 15 inches; silt loam
 A2—15 to 31 inches; silt loam
 2C—31 to 60 inches; very gravelly loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components

Stream channels

Percent of the map unit: 0 to 10 percent

66018—Darwin silty clay loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

Landform: Flood plains in river valleys

Component Description

Darwin

Percent of the map unit: 90 percent
Parent material: Clayey alluvium
Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Runoff rate: High

Component Hydrologic Properties

Frequency of flooding: Occasional
Current depth to water table: 0 to 18 inches
Drainage class: Very poorly drained

Typical Profile

Ap—0 to 7 inches; silty clay loam
 A—7 to 24 inches; silty clay loam
 Bg—24 to 59 inches; silty clay
 BCg—59 to 65 inches; stratified silt loam to silty clay

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components

Leta and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 0 to 2 percent

Darwin silt loam, overwash, and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 0 to 2 percent
Landform: Flood plains

66019—Haynie loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

Landform: Flood plains in river valleys

Component Description

Haynie

Percent of the map unit: 90 percent
Parent material: Alluvium
Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Runoff rate: Low

Component Hydrologic Properties

Frequency of flooding: Occasional
Current depth to water table: More than 6 feet
Drainage class: Well drained

Typical Profile

Ap1—0 to 5 inches; loam
 Ap2—5 to 13 inches; loam
 C—13 to 66 inches; stratified very fine sandy loam to silt loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components

Sandover and similar soils

Estimated percent of the map unit: 0 to 10 percent
Slope range: 0 to 2 percent
Landform: Flats on flood plains

Blake and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

Darwin and similar soils

Estimated percent of the map unit: 0 to 2 percent
Slope range: 0 to 2 percent
Landform: Flood plains

66020—Haynie silt loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

Landform: Flood plains in river valleys

Component Description

Haynie

Percent of the map unit: 90 percent
Parent material: Alluvium
Slope shape: Linear

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)
Runoff rate: Low

Component Hydrologic Properties

Frequency of flooding: Frequent
Current depth to water table: More than 6 feet
Drainage class: Well drained

Typical Profile

Ap—0 to 7 inches; silt loam
 C—7 to 60 inches; stratified very fine sandy loam to silt loam

Detailed descriptions of specific horizons are available in the "Soil Properties" section and under the heading "Classification of the Soils."

Minor Components

Blake and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 0 to 2 percent
Landform: Flood plains

Sandover and similar soils

Estimated percent of the map unit: 0 to 5 percent
Slope range: 0 to 2 percent
Landform: Flats on flood plains

66021—Perche loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

Landform: Flood plains in river valleys

Component Description

Perche

Percent of the map unit: 75 percent

Parent material: Coarse-loamy alluvium

Slope shape: Concave

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Low

Component Hydrologic Properties

Frequency of flooding: Frequent

Current depth to water table: 24 to 42 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 4 inches; loam

C—4 to 60 inches; stratified loamy sand to silt loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Wilbur and similar soils

Estimated percent of the map unit: 0 to 10 percent

Slope range: 0 to 2 percent

Landform: Flood plains

Haymond and similar soils

Estimated percent of the map unit: 0 to 10 percent

Slope range: 0 to 2 percent

Landform: Flood plains

Moniteau and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 3 percent

Landform: Treads on stream terraces

66022—Sandover sand, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

Landform: Flood plains in river valleys

Component Description

Sandover

Percent of the map unit: 85 percent

Parent material: Sandy alluvium over loamy alluvium

Slope shape: Concave

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Negligible

Component Hydrologic Properties

Frequency of flooding: Occasional

Current depth to water table: 24 to 36 inches

Drainage class: Moderately well drained

Typical Profile

Ap—0 to 6 inches; sand

C—6 to 31 inches; stratified fine sandy loam to sand

2C—31 to 80 inches; stratified very fine sandy loam to loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Sarpy and similar soils

Estimated percent of the map unit: 0 to 10 percent

Slope range: 0 to 2 percent

Landform: Flood plains

Blake and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

66023—Sarpy fine sand, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

Landform: Flood plains in river valleys

Component Description

Sarpy

Percent of the map unit: 80 percent

Parent material: Sandy alluvium

Slope shape: Concave

Component Properties and Qualities

Depth to bedrock: Very deep (more than 60 inches)

Runoff rate: Negligible

Component Hydrologic Properties*Frequency of flooding:* Occasional*Current depth to water table:* More than 6 feet*Drainage class:* Excessively drained**Typical Profile**

A—0 to 3 inches; fine sand

C—3 to 62 inches; fine sand

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components**Sandover and similar soils***Estimated percent of the map unit:* 0 to 15 percent*Slope range:* 0 to 2 percent*Landform:* Flats on flood plains**Blake and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 0 to 2 percent**66024—Wilbur silt loam, 0 to 2 percent slopes, frequently flooded****Map Unit Setting***Landform:* Flood plains in river valleys**Component Description****Wilbur***Percent of the map unit:* 80 percent*Parent material:* Coarse-silty alluvium*Slope shape:* Linear**Component Properties and Qualities***Depth to bedrock:* Very deep (more than 60 inches)*Runoff rate:* Low**Component Hydrologic Properties***Frequency of flooding:* Frequent*Current depth to water table:* 18 to 24 inches*Drainage class:* Moderately well drained**Typical Profile**

A—0 to 8 inches; silt loam

Bw—8 to 36 inches; silt loam

Cg—36 to 66 inches; silt loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components**Moniteau and similar soils***Estimated percent of the map unit:* 0 to 10 percent*Slope range:* 0 to 3 percent*Landform:* Treads on stream terraces**Perche and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 0 to 3 percent*Landform:* Flood plains**Haymond and similar soils***Estimated percent of the map unit:* 0 to 5 percent*Slope range:* 0 to 2 percent*Landform:* Flood plains**Ponded areas***Percent of the map unit:* 0 to 2 percent*Landform:* Flood plains**66025—Jemerson silt loam, 0 to 3 percent slopes, rarely flooded****Map Unit Setting***Landform:* Stream terraces in river valleys**Component Description****Jemerson***Percent of the map unit:* 85 percent*Parent material:* Fine-silty alluvium*Slope shape:* Convex**Component Properties and Qualities***Depth to bedrock:* Very deep (more than 60 inches)*Runoff rate:* Low**Component Hydrologic Properties***Frequency of flooding:* Rare*Current depth to water table:* 42 to 60 inches*Drainage class:* Well drained**Typical Profile**

Ap—0 to 11 inches; silt loam

Bt1—11 to 41 inches; silt loam

Bt2—41 to 67 inches; silt loam

Detailed descriptions of specific horizons are available in the “Soil Properties” section and under the heading “Classification of the Soils.”

Minor Components

Freeburg and similar soils

Estimated percent of the map unit: 0 to 10 percent

Slope range: 2 to 5 percent

Wilbur and similar soils

Estimated percent of the map unit: 0 to 5 percent

Slope range: 0 to 2 percent

Landform: Flood plains

99000—Pits, quarries

Component Description

- This map unit consists of open excavations in areas where soil material has been removed and the underlying sand, gravel, or limestone bedrock has been exposed. Areas include both abandoned and

active quarries and pits. They range from about 5 to more than 100 acres in size.

99001—Water

Component Description

- This map unit consists of naturally occurring basins of surface water, such as perennial rivers and creeks. It also includes manmade lakes and ponds that are larger than 5 acres and that have dams.

99003—Miscellaneous water

Component Description

- This map unit consists of small manmade areas that are used as fish hatcheries or for water treatment applications and that contain water all or most of the year.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern that is in harmony with nature.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various land uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The

ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited or not limited by all of the soil features that affect a specified use. Terms for the limitation classes are *not limited*, *slightly limited*, *moderately limited*, *limited*, and *very limited*. In certain tables the soils are rated as *improbable*, *possible*, or *probable* sources of specific materials used for construction purposes.

Numerical Ratings

Numerical ratings in the tables indicate the severity of individual limitations. They also indicate the overall degree to which a soil is limited or not limited for a specific use. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation.

In tables that use limitation class terms, such as *very limited* or *limited*, the limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as three soil features may be listed for each map unit component. The overall limitation rating for the component is based on the most severe limitation.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. Prime farmland is

described, the estimated yields of the main crops and pasture plants are listed, and the system of land capability classification used by the Natural Resources Conservation Service is explained.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Of the total land area in Boone County, approximately 135,000 acres is used for row crops and 100,000 acres is used for pasture. About 40 percent of the cropland and 50 percent of the pastureland is under some form of soil conservation management. In 1991, only 16,967 acres had been set aside in the Conservation Reserve Program of the Natural Resources Conservation Service.

The major row crops grown in the county are corn, soybeans, wheat, and grain sorghum. Other row crops include tobacco, canola, popcorn, and sunflowers. Some small areas are devoted to vegetables and orchard crops, including pumpkins, watermelons, tomatoes, sweet corn, and squash and strawberries, apples, peaches, and pecans. Grapes are also produced in the survey area, and some of the grapes are marketed to a winery near Rocheport.

Soybeans are the most extensively grown crop. Between 1975 and 1990, the harvest area of soybeans averaged about 45,000 acres. In that same time period, the average harvest area of wheat was about 19,000 acres; corn, about 13,600 acres; and grain sorghum, about 4,800 acres. The total acreage of crops and pasture has been declining in recent years, partly because the rapid growth and expansion of Columbia has resulted in the extensive conversion of land to urban uses.

The primary soil management concern in all areas that have slopes of more than 2 percent is water erosion. Areas that are used for row crops or are overgrazed are particularly susceptible. Soils that have been subjected to erosion on an extensive basis include Armstrong, Arisburg, Hatton, Keswick, Leonard, Menfro, Mexico, Weller, and Winfield soils.

The claypan area in the northeastern and east-central areas of the county is mostly used for production of row crops. Factors that limit production in this area are soil wetness and the hazard of water erosion.

Although the terrain is gentle, many of the soils, including Mexico, Leonard, and Keswick soils, have

been subjected to sheet and rill erosion following intensive cropping activities. This erosion reduces soil fertility, especially in the surface layer. As topsoil is washed downhill, areas of the clayey subsurface layers are exposed. As a result, soil tilth is affected and field tillage is more difficult.

Yields in this area may also be lower in some years than in others because of excessive moisture in the generally poorly drained soils. Putnam soils, for example, are subject to occasional ponding.

Parts of the river hills area that are not forested are mostly used for pasture and hay. These areas are mostly on ridgetops. The hazard of erosion is severe in these areas, primarily because of the moderately or steeply sloping terrain. Overgrazing and past attempts at growing corn and wheat have resulted in large gullies, some of which are more than 20 feet deep. Planting along the contour and installing terraces help to control erosion in some areas. Crop rotation can also be effective. In general, however, soils that have slopes of more than 15 percent are too unstable for seedbed preparation unless extreme management practices are applied.

In areas of bottom land along the Missouri River, a wide range of soil properties affects management decisions. Because many of the soils in this area are calcareous, applications of lime are not needed. Lime is needed in many areas of the uplands.

Soil drainage varies considerably in the bottom-land areas. Some soils, such as Sarpy and Haynie soils, tend to be very droughty during dry periods. Sprinkler irrigation can improve crop production in areas of these soils, but excessive irrigation may result in the leaching of fertilizers and pesticides into the ground water.

Other soils on bottom land, such as Darwin, Leta, Blake, Tanglenook, and Auxvasse soils, are susceptible to wetness. These soils are suitable for most field crops, but surface compaction and the formation of clods are concerns. If a suitable outlet is available, shallow drainage ditches can improve growing conditions in these areas.

Soil blowing is a hazard on sandy soils, such as Blake, Sandover, and Sarpy soils. It can aggravate erosion problems and damage young seedlings. Conservation tillage, winter cover crops, and windbreaks can be effective in controlling soil blowing.

Some of the bottom land along the Missouri River is not protected by levees. Haynie and Blake soils are in areas of bottom land. They are subject to frequent flooding and are generally not considered suitable for agricultural production.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 179,834 acres in the survey area, or 40.7 percent of the total acreage, meets the soil requirements for prime farmland.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 5. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the

detailed soil maps. Some of the soil qualities and properties that affect use and management are described under the heading "Detailed Soil Map Units."

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of map units in the survey area also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major

and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forestland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit (USDA, 1961). Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, 2*e*. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, forestland, wildlife habitat, or recreation.

The capability classification of map units in this survey area is given in table 6.

Pasture and Hayland Suitability Groups

The soils in Boone County are assigned to a pasture and hayland group according to their suitability for pasture management.

Many different pasture and hayland suitability groups are in the survey area. Over time, the combination of plants best suited to a particular soil and climate has or will become dominant. Plant communities are not static but vary slightly from year to year and from place to place.

The relationship between soils and vegetation was ascertained during this survey. Thus, pasture and hayland suitability groups generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of each plant species. Soil reaction, salt content, and a seasonal high water table also are important. The "Field Office Technical Guide," which is available at local offices of the Natural Resources Conservation Service, can provide specific information about pasture and hayland suitability groups.

Table 7 shows, for each soil, the assigned pasture and hayland suitability group. Specific concerns and recommendations for pasture and hayland management for each group are described in the following paragraphs.

Group WLB—Wet Loamy Bottom. A seasonal high water table and flooding are the main management concerns. Plants should be selected accordingly. A seedbed can be easily prepared. A drainage system can improve the growth of deep-rooted species. The hazard of flooding should be considered when a grazing system is designed.

Group WCB—Wet Clayey Bottom. Wetness and flooding are the main management concerns. The soils in this group are poorly suited to hay. The hazard of flooding should be considered when a grazing system is designed. Maintaining stands of desirable species is difficult in depressional areas. A drainage system can improve the growth of deep-rooted species.

Group WCU—Wet Clayey Upland. Wetness is the

main management concern. Maintaining stands of desirable species is difficult in depressional areas. A drainage system can improve the growth of deep-rooted species.

Group WLO—Wet Loamy Overflow. Wetness and flooding are the main management concerns. A seedbed can be easily prepared. A drainage system can improve the growth of deep-rooted species. The hazard of flooding should be considered when a grazing system is designed.

Group LyO—Loamy Overflow. Flooding is the main management concern. The hazard of flooding should be considered when a grazing system is designed.

Group LyU—Loamy Upland. No serious concerns affect pasture and hayland management. Erosion is a hazard in newly seeded areas. Timely seedbed preparation is needed to ensure a good ground cover.

Group CyU—Clayey Upland. Pasture and hay crops are effective in controlling erosion. Erosion during seedbed preparation is the main concern. Timely tillage and a quickly established ground cover reduce the hazard of erosion. The forage species that are tolerant of wetness grow best. The production of deep-rooted legumes is limited because of wetness and a restricted rooting depth.

Group GrU—Gravelly Upland. The soils in this group generally are not suited to cultivated crops. Droughtiness and erosion are the main management concerns. Seedbeds should be prepared on the contour. Timely seedbed preparation helps to ensure rapid plant growth and a protective ground cover.

Group MDU—Moderately Deep Upland. Shallow-rooted species that are tolerant of droughtiness should be selected for planting. Erosion is a serious hazard in newly seeded areas. Timely tillage and a quickly established ground cover reduce the hazard of erosion.

Group WtP—Wet Pan. The species that are tolerant of wetness grow best. A dense layer in the subsoil can restrict the rooting depth and result in insufficient soil moisture in dry years. Erosion during seedbed preparation is the main concern. Timely tillage and a quickly established ground cover reduce the hazard of erosion.

Group LyP—Loamy Pan. A few small areas of this group are used for cultivated crops, and some areas are wooded. A dense layer in the subsoil can restrict the rooting depth and result in insufficient soil moisture in dry years. Erosion during seedbed preparation is a hazard. Seedbeds should be prepared on the contour. Timely tillage and a quickly established ground cover reduce the hazard of erosion.

Group GrO—Gravelly Overflow. Most areas of

this group have been cleared of trees and are used for pasture and hay. Proper stocking rates, pasture rotation, timely deferment of grazing, and restricted use during periods of flooding help to keep the pasture in good condition.

Group GrP—Gravelly Pan. If the soils in this group are used for improved pasture, chert on the surface hinders tillage. Because of seasonal droughtiness, timely planting is needed to ensure an adequate stand. Erosion is a hazard in newly seeded areas. Timely seedbed preparation helps to ensure a protective ground cover.

Group ShU—Shallow Upland. Most areas of this group are used for native pasture and are best suited to shallow-rooted species. In some areas tillage is nearly impossible. Broadcast seeding may be necessary. The slope and rock outcrop can hinder mowing in places.

Group GNS—Generally Not Suited. The soils in this group generally are not suited to pasture and hay. The suitability for forage species and the use of equipment are limited by the slope, a high content of rock fragments, or both.

Forest Productivity and Management

Douglas C. Wallace, forester, Natural Resources Conservation Service, helped prepare this section.

Approximately 108,105 acres, or about 24 percent of the survey area, is forested, according to 1986 woodland survey estimates by the Missouri Department of Conservation. Upland woodland tracts in the county are primarily small, irregular, private holdings of 10 to 100 acres and are essentially unmanaged (Geissman and others, 1986). Larger continuous tracts of forestland occur on the bluffs along the Missouri River Valley and the valleys of Cedar Creek and Perche Creek. In areas on the flood plains, forests are restricted to long narrow bands bordering streams and rivers.

Tree species and growth rates in the county vary, depending on *soil properties*, *site characteristics*, and *past management activities*.

Soil properties that affect the growth of trees include reaction (pH), fertility, drainage, texture, structure, and soil depth. The soil also serves as a reservoir for moisture, provides an anchor for roots, and supplies essential plant nutrients. Soils that do not have extremes of these properties and have an effective rooting depth of more than 40 inches allow the best growth for wood production.

Site characteristics that affect tree growth include

aspect, slope, and topographic position. These site characteristics influence the amount of available sunlight, air drainage, soil temperature, soil moisture, and relative humidity. Typically, north and east aspects and the lower slope positions, which are cooler and have better moisture conditions than other sites, are the best upland sites for tree growth. The most productive soils on bottom land are generally areas of deep, moderately well drained, occasionally flooded soils.

Management activities can influence woodland productivity and should be aimed at eliminating factors causing tree stress. Generally, these activities include thinning overstocked young stands; harvesting old, mature trees; eliminating destructive fire; and preventing grazing. Fire and grazing have very negative impacts on forest growth and quality. Although forest fires are no longer a major problem in the county, about 50 percent of the woodland is still subject to grazing. Grazing destroys the leaf layer on the surface, compacts the soil, and destroys or damages tree seedlings. Woodland sites that are protected from livestock and fire have the highest potential for optimum timber production.

Winnegan, Bardley, Winfield, Clinkenbeard, Gasconade, and Menfro soils are associated with the largest acreage of upland forests. Typical species include white oak, northern red oak, post oak, black oak, sugar maple, and shagbark hickory. Post oak, black oak, eastern redcedar, hickory, and blackjack oak are dominant species in the less productive areas of Bardley, Clinkenbeard, and Gasconade soils on steeply dissected, weathered dolomite and limestone slopes. Forested areas of Menfro soils that have not been disturbed are the most productive. Winnegan and Winfield soils are intermediate in productivity.

Along the major watercourses, Perche, Darwin, and Moniteau soils support bottom-land hardwoods adapted to saturated or flooded soil conditions. Many areas of these soils have been cleared for crop production. The remaining wooded sites typically support silver maple, hackberry, American elm, swamp white oak, sycamore, cottonwood, pecan, and pin oak. Bur oak, shellbark hickory, and walnut are common along the smaller stream bottoms and on the higher terraces along the major streams. These sites have a high potential for excellent forest growth. In addition to their importance for timber production, streamside forests are crucial to the protection and enhancement of the water resource of Boone County (Welsch, 1991).

Special-use tree plantings (Christmas trees, nut

trees, and fuelwood trees) can be successful if adapted species are used. Christmas tree plantings can be established on any soil that is not poorly drained or very poorly drained. Suitable tree species in Boone County include Scotch pine, Austrian pine, white pine, and Douglas-fir. Nut trees, such as eastern black walnut and native pecan, are best suited to deep, loamy, moderately well drained or well drained soils, such as Menfro, Winnegan, and Winfield soils in the uplands and Haymond, Blake, and Haynie soils on the bottom land. Pecan trees should only be planted in somewhat poorly drained areas on bottom land that are subject to occasional or frequent flooding. Other soils are also suited but may be less productive. Planting trees for fuelwood is also feasible in Boone County if fast-growing trees are used. The species that are most suitable for this purpose are green ash, black locust, sycamore, cottonwood, and silver maple.

The tables in this section can help forest owners or managers plan the use of soils for wood crops. They show the potential productivity of the soils for wood crops and rate the soils according to the limitations that affect various aspects of forest management.

Forest Productivity

In table 8, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or through the Agency's Website.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Forest Management

In tables 9a and 9b, interpretive ratings are given for various aspects of forest management. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified aspect of forest management. *Not limited* indicates that the soil has features that are very favorable for the specified aspect of management. Good performance and very low maintenance can be expected. *Slightly limited* indicates that the soil has features that are favorable for the specified aspect of management. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. *Moderately limited* indicates that the soil has features that are moderately favorable for the specified aspect of management. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Limited* indicates that the soil has one or more features that are significant limitations for the specified aspect of management. The limitations can be overcome, but overcoming them generally requires special design, special planning, soil reclamation, specialized equipment, or other procedures that may result in additional expense. Fair performance and moderate or high maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified aspect of management. The limitations generally cannot be overcome without major soil reclamation, special design, specialized equipment, or other expensive procedures. Poor performance, unsafe conditions, or high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation.

Limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as

three soil features may be listed for each component. The overall limitation class for the component is based on the most severe limitation.

The paragraphs that follow indicate the soil properties considered in rating the soils for forest management factors. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or through the Agency's Website.

Ratings in the column *hand planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. Ratings indicate the expected difficulty of hand planting, which includes the proper placement of root systems of tree seedlings to a depth of up to 12 inches, using standard hand planting tools. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. Ratings indicate the expected difficulty in using a mechanical planter, which includes proper placement of root systems of tree seedlings to a depth of up to 12 inches. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, surface texture, depth to a water table, and ponding. Ratings indicate the suitability for operating harvesting equipment for off-road transport or harvest of logs and/or wood products by ground-based wheeled or tracked equipment.

Ratings in the column *mechanical site preparation (surface)* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The part of the soil from the surface to a depth of about 12 inches is considered in the ratings. Ratings indicate the suitability of using surface-altering soil tillage equipment to prepare the site for planting or seeding.

Ratings in the column *roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, surface texture, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads on which trucks transport logs and other wood products from the site.

In table 9b, ratings in the column *erosion on roads*

and trails are based on the soil erodibility factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails.

Ratings in the column *off-road or off-trail erosion* are based on slope and on the soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance.

Ratings in the column *soil rutting* are based on depth to a water table, rock fragments on or below the surface, surface texture, depth to a restrictive layer, and slope. Ruts form as a result of the operation of forest equipment. Ratings indicate limitations affecting the hazard or risk of ruts in the uppermost layers of the soil. Soil displacement and puddling (soil deformation and compaction) may occur simultaneously with the formation of ruts.

Ratings in the column *log landings* are based on slope, rock fragments on the surface, plasticity index, content of sand, surface texture, depth to a water table, ponding, flooding, and the hazard of soil slippage. Ratings indicate the suitability of the soil at the forest site to serve as a log landing and to allow the efficient and effective use of equipment for the temporary storage and handling of logs.

Ratings in the column *seedling survival* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. Ratings indicate the impact of soil, physiographic, and climatic conditions on the survivability of newly established tree seedlings.

Windbreaks and Environmental Plantings

Douglas C. Wallace, forester, Natural Resources Conservation Service, helped prepare this section.

Living plants play an important role in supporting our life and improving its condition. Properly used and maintained, plants help provide positive solutions to many problems in our contemporary environment. In Boone County, windbreaks and environmental plantings can be utilized throughout the landscape to meet a variety of engineering, climatological, and esthetic needs.

Windbreaks can be grown successfully in many areas of Boone County. Several specific aspects of management should be considered when farmstead and field windbreaks are planned. These include design and layout, species selection, site preparation, seedling handling, weed management, supplemental

watering, and protection from diseases, insects, and livestock.

Farmstead windbreaks make the farmstead area a more comfortable place, reduce energy costs, increase garden and fruit tree yields, enhance wildlife populations, buffer noises, and raise property values (Scholten, 1988). Feedlot windbreaks can be used to protect livestock from wind and snow. Windbreaks significantly reduce calf losses, make feeding operations easier, and enable livestock to maintain better weight with less feed.

Farmstead and feedlot windbreaks are generally two or more rows wide, and at least two of the rows consist of an evergreen species. The windbreaks should be established on the windward side of the area to be protected and as perpendicular as possible to the prevailing winds. Well designed farmstead and feedlot windbreaks are needed throughout Boone County, especially on the open, former prairie areas of the Adco-Mexico-Putnam and Mexico-Leonard associations, which are described under the heading "General Soil Map Units."

Field windbreaks or shelterbelts are designed to protect field crops and bare soil from the effects of strong winds. Field windbreaks minimize soil losses, increase crop yields, retard the spread of weeds between fields, and enhance wildlife habitat (Brandle and others, 1988). They should be carefully planned. Field boundaries, irrigation systems, power lines, and roads should be considered when the location of field windbreaks is determined. Windbreaks should be oriented at a right angle to the prevailing winds. The typical field windbreak system consists of a series of single rows of trees or shrubs. Field windbreaks are adaptable to many locations throughout Boone County but would be most beneficial on the open flood plains of the Haynie-Blake-Darwin-Leta and Wilbur-Moniteau-Perche-Haymond associations.

Environmental plantings can be used for beautification, visual screens, and control of acoustical, pollution, and climatological problems around buildings and other living spaces. Care should be given to selecting plants that exhibit proper height, shape, form, color, and texture and that are compatible with the surrounding area, structures, and desired use (Robinette, 1972). Establishing trees and shrubs is relatively easy in most areas of Boone County, but adequate site preparation prior to planting and control of competition from weeds after planting are necessary.

Table 10 shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in the table are based on measurements and observation of established

plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local office of the Natural Resources Conservation Service or of the Cooperative Extension Service or from a commercial nursery.

Recreation

Shannon Zezula, area wildlife services biologist, Missouri Department of Conservation, helped prepare this section.

The rich diversity of plant and animal communities in Boone County provides numerous recreational opportunities. The Missouri River offers a multitude of recreational activities. River access for boats has been developed on the Missouri River by the Missouri Department of Conservation (MDC). The Hartsburg Access is a 30-acre area just west of Hartsburg. It is accessible to persons with disabilities. The Providence Access is a 5-acre area on Perche Creek, which flows into the Missouri River. Sunfish, catfish, suckers, and crappie are common from both accesses (Missouri Department of Conservation, 1997).

The Missouri Department of Conservation also manages several lakes in Boone County that are a part of the Community Assistance Program (CAP). This program provides fisheries management to local communities for developing and upgrading public use sites. In return, local communities maintain the area and its facilities and allow public access to their lakes. Columbia has six CAP sites. Largemouth bass, bluegill and other sunfish, and catfish are common at Antimi Lake (2 acres with trails, picnic areas, and an MDC office); Cosmo-Bethel Lake (6 acres in a city park, which includes a picnic area); Lake of the Woods Recreation Area (a 3-acre lake that offers picnic areas and an MDC office); South Farm R-1 Lake (9 acres); and Twin Lake Recreation Area (a 50-acre area that offers trails, a picnic area, swimming, and handicapped-accessible fishing facilities). Twin Lake Recreation Area also offers fishing for crappie. Sunfish are abundant at the 15-acre Nifong Park Pond.

Other CAP lakes in Boone County are Ashland Lake (12 acres and a boat ramp); Dairy Farm Lake #1 (15.5 acres and a boat ramp) and Dairy Farm Lake #3 (5 acres); and Turkey Farm Lake (11.5 acres). Largemouth bass, bluegill and other sunfish, and catfish are common at these lakes. In addition, crappie are common at Ashland Lake and Dairy Farm Lake #3.

The Missouri Department of Conservation also

manages several properties in Boone County that offer recreational opportunities. In Columbia, the 70-acre Hinkson Woods Conservation Area offers fishing for largemouth bass, carp, catfish, and sunfish and has hiking trails that are accessible to persons with disabilities. Natural features in this area include riparian timber and creek bluffs. The H.J. Waters and C.B. Moss Memorial Conservation Area in Columbia offers hiking trails and a public contact office and is accessible to persons with disabilities. Along Grindstone Creek in this area are 75-foot limestone bluffs. Northeast of Columbia is the 30-acre Tri-City Community Lake, which offers camping, fishing, and an archery range. Deer, rabbits, squirrels, and songbirds are common in these areas, but no hunting is allowed.

Other public-use areas in Boone County that are managed by the Missouri Department of Conservation include the Lick Creek Conservation Area (317 acres), the Three Creeks Conservation Area (1,277 acres, with natural features including Hunter's Cave and Tumbling Cave Spring), and the Rocky Forks Lakes Conservation Area (2,189 acres). Deer, turkey, rabbits, and quail inhabit all of these areas and can be hunted. A variety of fish species also inhabits these areas.

The largest public-use conservation area in Boone County is the Eagle Bluffs Conservation Area (4,269 acres). This area is intensively managed for waterfowl use and is the largest wetland area in the country that uses treated municipal wastewater to supplement its wetland water needs.

The Missouri Department of Natural Resources also provides recreational opportunities in Boone County. The Katy Trail State Park follows the entire length of the Missouri River in Boone County and features some of the most scenic areas in the county. Trailheads are in Rocheport, McBaine, and Hartsburg (Missouri Department of Natural Resources Website, 2000).

The Jewell Cemetery State Historic Site is in southern Columbia. Features include ornate 19th-century stones and burial sites of prominent Missourians. Rock Bridge State Park has fascinating geologic features. This park includes Devil's Icebox Cave, the sixth largest cave in Missouri; a natural bridge; and bluffs and wooded hills. Horseback riding is allowed at certain times in the park.

The soils of the survey area are rated in table 11 according to limitations that affect their suitability for recreational uses. Soils are rated for camp areas, picnic areas, playgrounds, and paths and trails.

The ratings in the table are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in

evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect recreational site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. *Moderately limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Limited* indicates that the soil has one or more features that are significant limitations for the specified use. The limitations can be overcome, but overcoming them generally requires special design, soil reclamation, or installation procedures that may result in additional expense. Fair performance and moderate or high maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest

negative impact on the use and the point at which the soil feature is not a limitation.

Limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as three soil features may be listed for each component. The overall limitation rating for the component is based on the most severe limitation.

The information in table 11 can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy

foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, a water table, ponding, flooding, slope, and texture of the surface layer. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to frequent flooding during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Wildlife Habitat

Shannon Zezula, area wildlife services biologist, Missouri Department of Conservation, helped prepare this section.

Boone County is predominantly in the Ozark Border natural division of Missouri (Thom and Wilson, 1983; Yatskievych, 1999). Prior to European settlement, the primary vegetation in the area was oak-hickory and maple forest, glades, savannas, treeless prairie, and both wooded and herbaceous wetlands. In 1980, about 35 percent of Boone County supported a grassland cover type. About 33 percent was woodland, and 32 percent was cropland (USDA, 1985). These vegetative cover types influence the wildlife populations in the county.

Approximately 428 fish and wildlife species are known to occur in Boone County. These include 88 species of fish, 21 species of amphibians, 32 species of reptiles, 241 species of birds, and 46 species of mammals. Typical nongame species include the northern cardinal, the common grackle, and the pileated woodpecker. Common game species include eastern wild turkey, white-tailed deer, blue-winged teal, flathead catfish, common snapping turtle, and raccoon, all of which can be harvested according to the Missouri Wildlife Code.

Furbearers are common in Boone County. Bobcats, which prefer heavily forested areas, also inhabit the county, and their population appears to be expanding. Other common furbearers include raccoon, muskrat, opossum, coyote, beaver, and mink. River otter are also known to be repopulating the watercourses as a result of releases and management since the 1980's.

The federally endangered bald eagle and gray bat have been observed in the county. Species on

Missouri's rare and endangered list that are known to occur in Boone County include American bittern, short-eared owl, lake sturgeon, and spotted skunk (Missouri Department of Conservation, 1995).

Soil types and productivity generally dictate land use and therefore influence the value of vegetation and cover for wildlife. The diversity and abundance of wildlife in Boone County are further dependent on the type and diversity of vegetation and on how the different types of vegetative cover are interspersed. Most of the habitats in Boone County occur as a mosaic.

The place where two habitat types meet is called "edge." Developing edge habitat for wildlife is an important management opportunity in all areas of the county. Creating a better transition between different cover types benefits most wildlife more than a clear, defined break. For example, in a progression from a timbered area to grassland, good habitat would consist of tall trees in the timber, a transition to thick shrubby growth at the border, and finally a "feathering" out into the grassland, as opposed to tall trees and adjacent grassland habitat with no transitional area. The thick shrubby edge area provides the habitat elements that most wildlife use and benefit from. Species using edge include gray tree frog, five-lined skink, black-capped chickadee, several warblers, eastern cottontail rabbit, and northern bobwhite quail.

Wildlife managers try to create an edge with different vegetative heights and types. The goal is to create a transition zone that is rich in plant diversity. The habitat quality of most of the edge in Boone County is poor, mainly because the vegetation is currently a single species of grass or a single row crop or because the edge is an abrupt change between areas of different types of vegetation, without a transition zone.

Timbered areas of Boone County offer excellent opportunities for wildlife habitat management. Examples of woodland wildlife include white-tailed deer, eastern wild turkey, fox squirrel, and gray squirrel, all of which can be hunted. Other woodland species include barred owl, tiger salamander, northern cardinal, blue jay, and broad-winged hawk.

More than 50 percent of the vegetative cover in the Keswick-Hatton-Winnegan, Weller-Bardley-Clinkenbeard, Arisburg-Armstrong, and Menfro-Winfield-Rochepoint associations is woodland cover. Grass is the second most prevalent cover type in areas of these associations. The associations are described under the heading "General Soil Map Units."

Timber management is an important tool for enhancing wildlife habitat. Consultation with a professional forester is recommended. Keswick,

Winnegan, Hatton, Weller, Arisburg, Armstrong, Menfro, and Winfield soils are highly productive for timber and are generally the best sites on which to begin timber management in existing areas of woodland. Many of these sites have been cleared, however, and are presently used for other purposes. If tree planting is planned, these soils offer some of the best return on the dollar for wood fiber production. When grassland and cropland are abandoned in areas of these associations, woody species begin to invade and the total acreage of woodland increases. The most prevalent woody invader species are eastern redcedar, sassafras, persimmon, and post oak. Proper management of these invaders will enhance both wildlife habitat and future timber value, depending on the management objectives.

For proper management of woodland, a diverse mix of species is preferred. Among the oaks, a good mixture of red oak and white oak is important to wildlife because the acorns of these species mature at different times. Red oak acorns take 2 years to mature, whereas white oaks grow acorns and drop them in the same year. When white oak acorns are not available, the red oak acorn crop from the preceding year is available for wildlife. This cycle helps to ensure a consistent acorn crop. On alluvial soils along small and medium-sized river bottoms, walnut species offer good management potential for timber and wildlife habitat. Key woodland wildlife management priorities include minimizing grazing in areas of woodland, maximizing the diversity of tree species, preserving old second-growth tree communities, and developing edge habitat.

Prior to European settlement, much of Boone County was a grass-brush-timber mixture referred to as savannas (Beilmann and Brenner, 1951). The soils that may be managed or restored as savannas include Armstrong, Menfro, Winfield, Keswick, Winnegan, Hatton, and Weller soils (particularly on south- and west-facing slopes). Savanna management should include prescribed burning, limited livestock access, and removal of overstocked woody species.

Several soils in Boone County have numerous rock outcroppings and are referred to as dolostone glades. Small areas of these glades currently support xeric prairie-like flora that is not characteristic of other habitats in the county. Wildlife species that frequent the glades and savannas are similar to those in areas of edge habitat. Management practices that help to restore the grassland component on specific sites generally include the use of prescribed fire and a reduction in the amount of tree cover. (These sites also offer the potential to grow marketable eastern redcedar, but a different management program would

be required.) Key management considerations are similar to those for savannas. They include prescribed burning, limited livestock access, and removal of invasive woody cover.

Grassland cover makes up the most prevalent habitat type in the county. Soils of the Mexico series—for example, in areas of the Adco-Mexico-Putnam and Mexico-Leonard associations—originally supported mostly treeless prairie cover. These prairies occurred on broad upland summits. Significant areas of native prairie in Boone County have been described as originally occurring predominantly on the eastern side of the county (Schroeder, 1982).

A very important consideration affecting habitat for openland wildlife is the type of grass in which pastures and hayfields are established. Because of its vigor under almost any grazing situation, fescue is the most common forage species in the county. Unfortunately, fescue generally provides poor wildlife habitat. Intensive management of grazing systems is needed if habitat improvement is an objective in these areas. Such management includes introducing legumes, using different species of grass, implementing rotation grazing systems, and/or applying prescribed burning practices.

Where remnants of native warm-season grasses and native forbs exist, restoration of these natural communities is preferable to reintroduction. Restoration benefits wildlife as much as, if not more than, reintroduction and is generally easier to accomplish and less expensive. Restoration may include the use of prescribed fire, removal of invasive trees, edge development and management, and implementation of rotation grazing systems. Grassland wildlife species in Boone County include western chorus frog, dickcissel, red-tailed hawk, American kestrel, bobwhite quail, and eastern wild turkey.

The Haynie-Blake-Darwin-Leta association, which is on the flood plains along the Missouri River, and the Wilbur-Moniteau-Perche-Haymond association provide additional habitat for openland wildlife. These associations are heavily cropped. Many soil conservation measures can enhance the habitat in areas of cropland. These measures include leaving some crop standing for “food plots” and using a system of conservation tillage. Edge development in areas where cropland meets woodland and grassland can also provide habitat for a variety of wildlife. Wildlife species that are common in areas of cropland include mourning dove, red-tailed hawk, killdeer, northern bobwhite, coyote, eastern wild turkey, and white-tailed deer.

These associations also include areas of riparian habitat, or wooded areas along the streambanks.

Riparian areas offer timber management opportunities and provide critical habitat for belted kingfishers, great horned owls, yellow warbler, wood ducks, and many other terrestrial wildlife species. Riparian areas are also crucial as a contributing habitat for the fishery resource. Bald eagles and osprey frequent areas of these associations because of their proximity to the large rivers.

Most of the remaining wetlands in Boone County are in areas of the Haynie-Blake-Darwin-Leta and Wilbur-Moniteau-Perche-Haymond associations, but small wetlands also are in areas of bottom land in other associations. These wetlands are in old oxbows and river channels. Wetlands and marshes are an important cover type for many species of wildlife, including bullfrogs, red-winged blackbird, green-winged teal, blue-winged teal, beaver, deer, and mink.

Boone County has a significant amount of flowing water, including the Missouri River and many smaller streams. This wide diversity of hundreds of miles of permanent flowing streams provides habitat for approximately 88 species of fish and 11 species of freshwater mussels that are known to, or are likely to, occur in such waters (Oesch, 1995). Channel catfish, carp, drum, largemouth bass, bluegill, and other sunfish are quite common and provide sport for anglers. Giggling of nongame fish, floating, power boating, and wading also are important water-related recreational activities on these rivers and streams. Important management considerations for stream habitat include following proper gravel removal techniques, maintaining and enhancing riparian corridors, and minimizing streambank erosion and sedimentation by restricting livestock access.

In addition to flowing waters, Boone County has numerous small lakes and hundreds of ponds, most of which are stocked with largemouth bass, channel catfish, and bluegill.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In tables 12a and 12b, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife

habitat; and in determining the intensity of management needed for each element of the habitat.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. *Not limited* indicates that the soil has features that are very favorable for the specified use. Habitat is easily established, improved, or maintained. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Habitat can be established, improved, or maintained. *Moderately limited* indicates that the soil has features that are moderately favorable for the specified use. Habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. *Limited* indicates that the soil has one or more features that are significant limitations for the specified use. Habitat is difficult to create, improve, or maintain in most places. Management is difficult and must be very intensive. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. Habitat is usually impractical or impossible to create, improve, or maintain. Management would be very difficult, and unsatisfactory results can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation.

Limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as three soil features may be listed for each component. The overall limitation class for the component is based on the most severe limitation.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil

moisture also are considerations. Selection should be made from a list of locally adapted species.

Domestic grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Selection should be made from a list of locally adapted species.

Upland wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Selection should be made from a list of locally adapted species.

Upland shrubs and vines are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs and vines are depth of the root zone, available water capacity, salinity, and soil moisture. Selection should be made from a list of locally adapted species.

Upland deciduous trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees are depth of the root zone, available water capacity, and wetness. Selection should be made from a list of locally adapted species.

Upland mixed deciduous-conifer trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, browse, seeds, and foliage. Soil properties and features that affect the growth of these trees are depth of the root zone, available water capacity, and wetness. Selection should be made from a list of locally adapted species.

Riparian herbaceous plants are annual and perennial native or naturally established grasses and forbs that grow on moist or wet sites. Soil properties and features affecting riparian herbaceous plants are surface texture, wetness, flooding, ponding, and surface stones. Selection should be made from a list of locally adapted species.

Riparian shrubs, vines, and trees are bushy woody plants and trees that grow on moist or wet sites. Soil properties and features affecting these plants are surface texture, wetness, flooding, ponding, and surface stones. Selection should be made from a list of locally adapted species.

Freshwater wetland plants are grasses, forbs, and shrubs that are adapted to wet soil conditions. The

soils suitable for this habitat generally occur adjacent to springs, seeps, depressions, areas of bottom land, marshes, or backwater areas on flood plains. Most areas are ponded for some period of time during the year. Soil properties and features affecting these plants are surface texture, wetness, ponding, and soil reaction. Selection should be made from a list of locally adapted species.

Irrigated freshwater wetland plants are grasses, forbs, and shrubs that are adapted to wet soil conditions. The soils suitable for this habitat generally occur in areas of cropland, in previously cropped areas, and in marginal areas associated with cropland and wetlands. These areas may be ponded for some period of time during the year. They are generally suitable for restoring wetland features temporarily or permanently. Soil properties and features affecting these plants are surface texture, permeability, wetness, ponding, and soil reaction. Selection should be made from a list of locally adapted species.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, water management, and waste management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading "Soil Properties."

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil

survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; evaluate sites for agricultural waste management; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Table 13 shows the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Slightly*

limited indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. *Moderately limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Limited* indicates that the soil has one or more features that are significant limitations for the specified use. The limitations can be overcome, but overcoming them generally requires special design, soil reclamation, or installation procedures that may result in additional expense. Fair performance and moderate or high maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation.

Limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as three soil features may be listed for each component. The overall limitation rating for the component is based on the most severe limitation.

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation

and construction costs. The properties that affect the load-supporting capacity include a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, a water table, and ponding.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; a water table; ponding; depth to bedrock or a cemented pan; the available

water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Sanitary Facilities

The soils of the survey area are rated in table 14 according to limitations that affect their suitability for sanitary facilities. Soils are rated for septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect sanitary facilities. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. *Moderately limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Limited* indicates that the soil has one or more features that are significant limitations for the specified use. The limitations can be overcome, but overcoming them generally requires special design, soil reclamation, or installation procedures that may result in additional expense. Fair performance and moderate or high maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between

the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation.

Limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as three soil features may be listed for each component. The overall limitation rating for the component is based on the most severe limitation.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may be contaminated. Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, hillside seepage, and contamination of ground water, can affect public health.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the

water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A

final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Construction Materials and Excavating

The soils of the survey area are rated in table 15 as a source of roadfill, sand, gravel, or topsoil. Normal compaction, minor processing, and other standard construction practices are assumed. The soils are also rated according to limitations that affect their suitability for shallow excavations. The ratings in the table are both verbal and numerical.

For sand and gravel, the soils are rated as a *probable*, *possible*, or *improbable* source. A rating of

probable indicates that the source material is likely to be in or below the soil. A rating of *possible* indicates that the source material may be in or below the soil and that further investigation is warranted. A rating of *improbable* indicates that the source material is unlikely to be in or below the soil. The numerical ratings in these columns indicate the degree of probability. A numerical rating of 1.00 indicates that the soil is an improbable source. A numerical rating of less than 1.00 indicates the degree to which the soil is a possible or probable source of sand or gravel.

Other rating class terms used in this table indicate the extent to which the soils are limited by soil features that affect their use as a source for roadfill or topsoil or their suitability for shallow excavations. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. *Moderately limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Limited* indicates that the soil has one or more features that are significant limitations for the specified use. The limitations can be overcome, but overcoming them generally requires special design, soil reclamation, or installation procedures that may result in additional expense. Fair performance and moderate or high maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings for roadfill, topsoil, and shallow excavations indicate the severity of individual limitations. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest

negative impact on the use and the point at which the soil feature is not a limitation.

Limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as three soil features may be listed for each component. The overall limitation rating for the component is based on the most severe limitation.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In the table, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the lowest layer of the soil contains sand or gravel, the soil is rated as a probable source regardless of the thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant

growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material.

Reclamation of the borrow area is affected by slope, a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Water Management

Table 16 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas, drainage, irrigation, terraces and diversions, and grassed waterways.

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. *Moderately limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Limited* indicates that the soil has one or more features that are significant limitations for the specified use. The limitations can be overcome, but overcoming them generally requires special design, soil reclamation, or installation

procedures that may result in additional expense. Fair performance and moderate or high maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation.

Limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as three soil features may be listed for each component. The overall limitation rating for the component is based on the most severe limitation.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Slope can affect the storage capacity of the reservoir area.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, permeability, depth to a water table, ponding, slope, and flooding. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or a cemented pan, large stones, slope, and the likelihood that cutbanks will cave. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. The availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to a water table, ponding, flooding, available water capacity, intake rate, permeability, erodibility, and slope. The construction of a system is

affected by large stones and depth to bedrock. The performance of a system is affected by the depth of the root zone, reaction, and the amount of salts, sodium, sulfur, lime, or gypsum.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, a water table, ponding, large stones, and depth to bedrock affect the construction of terraces and diversions. A restricted rooting depth, erodibility, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, a water table, slope, and depth to bedrock affect the construction of grassed waterways. Erodibility, soil moisture regime, available water capacity, restricted rooting depth, restricted permeability, and toxic substances, such as salts and sodium, affect the growth and maintenance of the grass after construction.

Waste Management

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

Table 17 shows the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of this table, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 mg/l. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the

manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 mg/l. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the table are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater through irrigation) and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (slow rate treatment of wastewater and rapid infiltration of wastewater).

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. *Moderately limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Limited* indicates that the soil has one or more features that are significant limitations for the specified use. The limitations can be overcome, but overcoming them generally requires special design, soil reclamation, or installation procedures that may result in additional expense. Fair performance and moderate or high maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The numerical ratings are shown as decimal fractions ranging from 0.00 to 1.00. Limitation classes are assigned as follows:

Not limited	0.00
Slightly limited	0.01 to 0.30
Moderately limited	0.31 to 0.60
Limited	0.61 to 0.99
Very limited	1.00

The numerical ratings used to express the severity of individual limitations indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation.

Limitation class terms and numerical ratings are shown for each limiting soil feature listed. As many as three soil features may be listed for each component. The overall limitation rating for the component is based on the most severe limitation.

Land application of manure and food-processing waste not only disposes of waste material but also improves crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood of wind erosion or water erosion. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste.

Land application of municipal sewage sludge not only disposes of waste material but also improves crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood of wind erosion or water erosion. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also improves crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals.

Treatment of wastewater by slow rate process is a process in which wastewater is applied to land at a rate normally between 0.5 inch and 4.0 inches per week. The application rate commonly exceeds the rate needed for irrigation of cropland. The applied

wastewater is treated as it moves through the soil. Much of the treated water percolates to the ground water, and some enters the atmosphere through evapotranspiration. The applied water generally is not allowed to run off the surface. Waterlogging is prevented either through control of the application rate or through the use of tile drains, or both.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, and the application of waste. The properties that affect absorption include the sodium adsorption ratio, a water table, ponding, available water capacity, permeability, depth to bedrock or a cemented pan, reaction, the cation-exchange capacity, and slope. Reaction, the sodium adsorption ratio, salinity, and bulk density affect plant growth and microbial activity. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood of wind erosion or water erosion. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste.

Treatment of wastewater by rapid infiltration process is a process in which wastewater applied in a level basin at a rate of 4 to 120 inches per week percolates through the soil, eventually reaching the ground water. The application rate commonly exceeds the rate needed for irrigation of cropland. Vegetation is not a necessary part of the treatment; hence, the basins may or may not be vegetated. The thickness of the soil material needed for proper treatment of the wastewater is more than 72 inches. As a result, geologic and hydrologic investigation is needed to ensure proper design and performance and to determine the risk of ground-water pollution.

The ratings in the table are based on the soil properties that affect the risk of pollution and the design, construction, and performance of the system. A water table, ponding, flooding, and depth to bedrock or a cemented pan affect the risk of pollution and the design and construction of the system. Slope, stones, and cobbles also affect design and construction. Permeability and reaction affect performance.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 18 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in abbreviations of the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter (fig. 17). "Loam," for

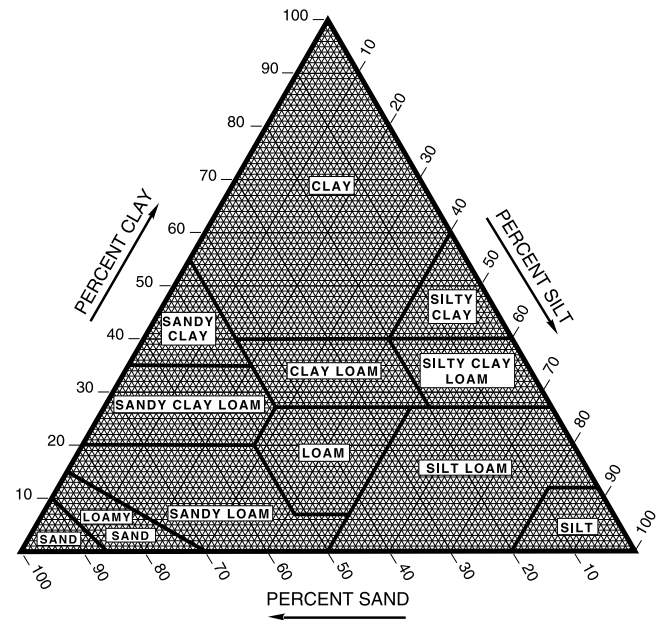


Figure 17.—Percentages of clay, silt, and sand in the basic USDA soil textural classes.

example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2001) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2000).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and

OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical Properties

Table 19 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in

the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In the table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In the table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $1/3$ - or $1/10$ -bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil

texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in micrometers per second (um/sec), when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $1/3$ - or $1/10$ -bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (K_w and K_f) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor K_w indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor K_f indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.
- 4L. Calcareous loams, silt loams, clay loams, and silty clay loams.
4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.

8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Properties

Table 20 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable bases plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Water Features

Table 21 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to two hydrologic groups in the table, the first letter is for drained areas and the second is for undrained areas.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. Table 21 indicates, by month, the depth to the top (*upper limit*) of the saturated zone in most years. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Flooding is the temporary inundation of an area

caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and frequency are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Soil Features

Table 22 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment.

Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation.

Depth to top is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1998 and 1999). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 23 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalf*, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great

group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-silty, mixed, superactive, mesic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff, 1998). Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Adco Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Very slow

Landform: Ridges on uplands

Position on the landform: Summits

Parent material: Loess over pedisegment

Slope range: 0 to 2 percent

Taxonomic classification: Fine, smectitic, mesic
Vertic Albaqualfs

Typical Pedon

Adco silt loam, 0 to 2 percent slopes, 400 feet north and 2,300 feet east of the southwest corner of sec. 2, T. 51 N., R. 11 W.; USGS Centralia NE topographic quadrangle; latitude 39 degrees 13 minutes 7 seconds N.; longitude 92 degrees 6 minutes 58 seconds W.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak medium platy structure parting to weak very fine granular; very friable; few very fine roots; moderately acid; abrupt smooth boundary.

E—9 to 16 inches; grayish brown (10YR 5/2) silt loam; few fine prominent yellowish red (5YR 4/6) iron masses; weak medium platy structure; very friable; few very fine roots; few very fine iron and manganese concretions and stains; very strongly acid; abrupt smooth boundary.

Btg—16 to 22 inches; dark grayish brown (10YR 4/2) silty clay; common fine prominent yellowish red (5YR 4/6) iron masses; moderate fine subangular blocky structure; very firm; many distinct clay films on faces of peds; common clay depletions in the upper 2 inches; few very fine roots; very strongly acid; clear smooth boundary.

Bt—22 to 28 inches; brown (10YR 4/3) silty clay; few fine distinct brown (7.5YR 5/4) iron masses; weak fine subangular blocky structure; firm; few dark grayish brown (10YR 4/2) coatings; common distinct clay films on faces of peds; very strongly acid; clear smooth boundary.

B'tg1—28 to 38 inches; grayish brown (10YR 5/2) silty clay; many fine and medium prominent yellowish red (5YR 4/6) and few fine prominent strong brown (7.5YR 5/6) iron masses; weak medium prismatic structure parting to weak fine subangular blocky; firm; common distinct clay films on faces of peds; strongly acid; clear smooth boundary.

B'tg2—38 to 49 inches; grayish brown (10YR 5/2) silty clay; few fine prominent yellowish red (5YR 5/6) and common medium prominent strong brown (7.5YR 5/6) iron masses; moderate medium

prismatic structure parting to weak fine subangular blocky; firm; common distinct clay films on faces of peds; strongly acid; clear smooth boundary.

2BCg—49 to 60 inches; gray (10YR 5/1) silty clay loam; common fine prominent strong brown (7.5YR 4/6) iron masses; moderate medium prismatic structure parting to weak fine subangular blocky; firm; few distinct clay films on vertical faces of peds; moderately acid.

Range in Characteristics

Ap horizon:

Hue—10YR

Value—3

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

E or BE horizon:

Hue—10YR

Value—4 to 6

Chroma—1 to 3

Texture of the fine-earth fraction—silt loam or silty clay loam

Bt horizon:

Hue—10YR

Value—4 or 5

Chroma—3 or 4

Texture of the fine-earth fraction—silty clay or clay

Btg or B'tg horizon:

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay or silty clay loam

2BCg or 2Btg horizon:

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay loam, clay loam, or silt loam

Arisburg Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Moderately slow

Landform: Ridges on uplands

Position on the landform: Summits and shoulders

Parent material: Loess

Slope range: 1 to 6 percent

Taxonomic classification: Fine, smectitic, mesic
Aquertic Argiudolls

Typical Pedon

Arisburg silt loam, 1 to 3 percent slopes, 2,200 feet south and 1,800 feet east of the northwest corner of sec. 21, T. 49 N., R. 14 W.; USGS Huntsdale topographic quadrangle; latitude 38 degrees 8 minutes 41 seconds N.; longitude 92 degrees 29 minutes 48 seconds W.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; common fine and very fine roots; moderately acid; abrupt smooth boundary.

A—7 to 11 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure parting to weak fine granular; friable; common fine and very fine roots; moderately acid; clear smooth boundary.

Bt—11 to 15 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; few fine distinct yellowish brown (10YR 5/6) iron masses; weak fine subangular blocky structure; friable; few clay films on faces of peds; few black (10YR 2/1) organic stains on faces of peds; common fine and very fine roots; strongly acid; clear smooth boundary.

Btg1—15 to 23 inches; dark grayish brown (10YR 4/2) silty clay loam; few fine distinct yellowish brown (10YR 5/6 and 5/4) iron masses; moderate fine subangular blocky structure; firm; many very dark grayish brown (10YR 3/2) clay films on faces of peds; few black (10YR 2/1) organic stains on faces of peds; few iron and manganese stains; few fine and very fine roots; very strongly acid; clear smooth boundary.

Btg2—23 to 32 inches; dark grayish brown (10YR 4/2) silty clay loam; common fine and medium distinct yellowish brown (10YR 5/6 and 5/4) iron masses; moderate fine subangular blocky structure; firm; common very dark grayish brown (10YR 3/2) clay films on faces of peds; few black (10YR 2/1) organic stains on faces of peds; few iron and manganese stains; few very fine roots; strongly acid; clear smooth boundary.

Btg3—32 to 47 inches; grayish brown (10YR 5/2) silty clay loam; common fine and medium distinct yellowish brown (10YR 5/6) iron masses; moderate medium prismatic structure parting to moderate fine subangular blocky; friable; common dark grayish brown (10YR 4/2) clay films on faces of peds; common black (10YR 2/1) organic stains on faces of peds and along root channels; common iron and manganese stains; few very fine roots; moderately acid; clear smooth boundary.

Btg4—47 to 60 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct strong brown (7.5YR 5/8) iron masses; weak medium prismatic structure parting to weak fine subangular blocky; friable; few dark grayish brown (10YR 4/2) clay films on faces of peds; few black (10YR 2/1) organic stains along root channels; few iron and manganese stains; moderately acid.

Range in Characteristics

Ap or A horizon:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture of the fine-earth fraction—silt loam

Bt horizon:

Hue—10YR

Value—3 to 6

Chroma—2 to 6

Texture of the fine-earth fraction—silty clay loam or silty clay

Btg horizon:

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay loam or silty clay

BCg or Cg horizon (if it occurs):

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay loam or silt loam

Armstrong Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Slow

Landform: Hills on uplands

Position on the landform: Backslopes

Parent material: Loess over till

Slope range: 5 to 9 percent

Taxonomic classification: Fine, smectitic, mesic
Aquertic Hapludalfs

Typical Pedon

Armstrong loam, 5 to 9 percent slopes, eroded, 450 feet east and 800 feet north of the southwest corner of sec. 11, T. 50 N., R. 14 W.; USGS Harrisburg topographic quadrangle; latitude 39 degrees 8 minutes

41 seconds N.; longitude 92 degrees 28 minutes 42 seconds W.

Ap—0 to 5 inches; very dark grayish brown (10YR 3/2) loam, dark grayish brown (10YR 4/2) dry; brown (7.5YR 4/3) clay loam mixed in the lower part; moderate medium subangular blocky structure parting to moderate fine subangular blocky; very friable; few masses of material from the 2Bt1 horizon in the lower part; many fine and few very fine roots; neutral; clear smooth boundary.

2Bt1—5 to 11 inches; brown (7.5YR 4/3) clay loam; common medium prominent red (2.5YR 4/6) iron masses; common medium distinct grayish brown (10YR 5/2) iron depletions; moderate medium subangular blocky structure parting to strong fine subangular blocky; very firm; common faint clay films on faces of peds; common sand grains; few fine iron and manganese stains; many fine and very fine roots; 1 percent pebbles; very strongly acid; gradual smooth boundary.

2Bt2—11 to 18 inches; brown (7.5YR 4/3) clay; common fine prominent strong brown (7.5YR 5/6) iron masses; common medium faint grayish brown (10YR 5/2) iron depletions; weak medium prismatic structure parting to moderate medium subangular blocky; very firm; common faint clay films on faces of peds; common sand grains; common fine and very fine roots; 1 percent pebbles; very strongly acid; diffuse smooth boundary.

2Bt3—18 to 24 inches; brown (10YR 5/3) clay; common fine prominent strong brown (7.5YR 5/6) and few fine prominent red (2.5YR 4/6) iron masses; weak medium prismatic structure parting to weak medium subangular blocky; very firm; common faint clay films on faces of peds; common sand grains; few fine and common very fine roots; 1 percent pebbles; very strongly acid; diffuse smooth boundary.

2Bt4—24 to 31 inches; grayish brown (10YR 5/2) clay; many fine prominent strong brown (7.5YR 5/6) iron masses; weak medium prismatic structure parting to weak coarse subangular blocky; very firm; few dark grayish brown (10YR 4/2) organic stains on faces of peds; few faint clay films on faces of peds; common sand grains; common very fine roots; 1 percent pebbles; very strongly acid; clear smooth boundary.

2Btg—31 to 44 inches; light brownish gray (10YR 6/2) clay loam; common fine prominent strong brown (7.5YR 5/6) and yellowish red (5YR 5/8) iron masses; weak medium prismatic structure; very firm; few faint clay films on faces of peds; common

sand grains; common iron and manganese stains; few very fine roots; 1 percent pebbles; strongly acid; gradual smooth boundary.

2BCg—44 to 70 inches; light brownish gray (2.5Y 6/2) clay loam; common medium prominent yellowish red (5YR 5/6) iron masses; moderate coarse angular blocky structure; very firm; common sand grains; few iron and manganese stains; few very fine roots; 2 percent pebbles; neutral.

Range in Characteristics

Ap horizon:

Hue—10YR

Value—3

Chroma—1 to 3

Texture of the fine-earth fraction—loam

2Bt horizon:

Hue—7.5YR or 10YR (2.5YR or 5YR in iron masses)

Value—4 or 5

Chroma—2 to 6

Texture of the fine-earth fraction—clay loam, silty clay, or clay

2Btg horizon:

Hue—10YR

Value—5 or 6

Chroma—1 or 2

Texture of the fine-earth fraction—clay loam

2BCg horizon:

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—1 or 2

Texture of the fine-earth fraction—clay loam

Auxvasse Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Very slow

Landform: Stream terraces in river valleys

Parent material: Alluvium

Slope range: 0 to 2 percent

Taxonomic classification: Fine, smectitic, mesic
Aeric Albaqualfs

Typical Pedon

Auxvasse silt loam, 0 to 2 percent slopes, rarely flooded, 1,600 feet north and 1,300 feet west of the southeast corner of sec. 32, T. 49 N., R. 11 W.; USGS Millerburg topographic quadrangle; latitude 39 degrees 57 minutes 46 seconds N.; longitude 92 degrees 10 minutes 22 seconds W.

- Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak very fine subangular blocky structure; very friable; few very fine roots; slightly acid; clear smooth boundary.
- E—8 to 15 inches; grayish brown (10YR 5/2) silt loam; common fine faint brown (10YR 4/3) and common fine prominent brown (7.5YR 4/4) iron masses and common fine pieces of material from the A horizon; weak very fine subangular blocky structure; friable; few very fine roots; moderately acid; clear smooth boundary.
- Btg1—15 to 26 inches; dark grayish brown (10YR 4/2) silty clay; many fine and medium prominent dark yellowish brown (10YR 4/6) iron masses; moderate very fine subangular blocky structure; firm; many faint and few distinct clay films; few very fine roots; very strongly acid; clear smooth boundary.
- Btg2—26 to 32 inches; light brownish gray (10YR 6/2) silty clay loam; common coarse prominent strong brown (7.5YR 5/8) iron masses; moderate very fine subangular blocky structure; firm; common faint clay films; few very fine roots; very strongly acid; clear smooth boundary.
- Btg3—32 to 42 inches; light brownish gray (10YR 6/2) silty clay loam; few medium and coarse prominent strong brown (7.5YR 5/8) iron masses; weak fine subangular blocky structure; firm; few distinct clay films; very strongly acid; clear smooth boundary.
- Btg4—42 to 52 inches; light brownish gray (10YR 6/2) silty clay loam; weak fine subangular blocky structure; friable; few distinct clay films in pores; strongly acid; abrupt smooth boundary.
- 2Btg5—52 to 58 inches; very dark gray (10YR 4/1) silty clay loam; moderate very fine subangular blocky structure; firm; few prominent clay films in pores; strongly acid; clear smooth boundary.
- 2Btg6—58 to 72 inches; very dark gray (10YR 4/1) silty clay loam; common fine prominent dark reddish brown (2.5YR 3/4) iron masses in pores; weak very fine subangular blocky structure; firm; many faint clay films on faces of peds and few prominent clay films in pores; strongly acid.

Range in Characteristics

Ap or A horizon:

Hue—10YR

Value—4 or 5

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

E horizon:

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—2

Texture of the fine-earth fraction—silt loam

Btg or 2Btg horizon:

Hue—10YR to 5Y

Value—4 to 6

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay loam, clay, or silty clay

Bardley Series

Depth class: Moderately deep

Drainage class: Well drained

Permeability: Moderate

Landform: Hills on uplands

Position on the landform: Backslopes

Parent material: Colluvium over clayey residuum derived from cherty limestone

Slope range: 20 to 45 percent

Taxonomic classification: Very fine, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Bardley cobbly silt loam, in an area of Bardley-Clinkenbeard complex, 20 to 45 percent slopes, very stony, 1,400 feet south and 2,200 feet west of the northeast corner of sec. 30, T. 46 N., R. 11 W.; USGS Jefferson City NW topographic quadrangle; latitude 38 degrees 44 minutes 56 seconds N.; longitude 92 degrees 12 minutes 22 seconds W.

O—1 inch to 0; hardwood leaf litter and twigs.

A—0 to 3 inches; brown (10YR 4/3) cobbly silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure; friable; common coarse and many fine roots; 15 percent chert cobbles and 5 percent chert gravel; strongly acid; clear wavy boundary.

E—3 to 9 inches; brown (7.5YR 4/4) gravelly silt loam; strong medium subangular blocky structure parting to weak fine subangular blocky; friable; common coarse and many fine roots; 5 percent chert cobbles and 25 percent chert gravel; strongly acid; gradual wavy boundary.

2Bt1—9 to 23 inches; red (2.5YR 4/6) cobbly clay; moderate medium angular blocky structure parting to weak fine angular blocky; firm; few distinct yellowish brown (10YR 5/4) clay films on faces of peds; few coarse and common fine roots; 20 percent chert cobbles and 10 percent chert gravel; strongly acid; gradual smooth boundary.

2Bt2—23 to 36 inches; cobbly clay, yellowish red (5YR 4/6) grading to brown (7.5YR 4/4); moderate

medium angular blocky structure parting to moderate fine angular blocky; firm; large slickensides in the lower part; organic stains near limestone contact; few fine roots; 20 percent cobbles; few limestone flags and stones; neutral; clear irregular boundary.

2R—36 inches; limestone bedrock.

Range in Characteristics

Depth to bedrock: 20 to 40 inches

A horizon:

Hue—10YR

Value—3 or 4

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

Content of coarse fragments—15 to 50 percent

E horizon:

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—2 to 4

Texture of the fine-earth fraction—silt loam

Content of coarse fragments—30 to 50 percent

2Bt horizon:

Hue—2.5YR to 7.5YR

Value—4 or 5

Chroma—4 to 6

Texture of the fine-earth fraction—clay

Content of coarse fragments—10 to 35 percent

Blake Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Moderate

Landform: Flood plains in river valleys

Parent material: Silty alluvium

Slope range: 0 to 2 percent

Taxonomic classification: Fine-silty, mixed, superactive, calcareous, mesic Aquic Udifluvents

Typical Pedon

Blake silt loam, 0 to 2 percent slopes, occasionally flooded, 2,500 feet north and 3,000 feet west of the southeast corner of sec. 7, T. 45 N., R. 12 W.; USGS Hartsburg topographic quadrangle; latitude 38 degrees 41 minutes 43 seconds N.; longitude 92 degrees 19 minutes 49 seconds W.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure; friable; few very fine roots; few fine bits of charcoal; slightly

effervescent; slightly alkaline; clear smooth boundary.

C1—8 to 12 inches; very dark grayish brown (10YR 3/2), stratified silt loam and silty clay loam; few intermittent fine brown (10YR 5/3) strata containing few fine faint grayish brown (10YR 5/2) iron depletions and few fine prominent yellowish brown (10YR 5/6) iron masses; weak fine subangular blocky structure; friable; few very fine roots; slightly effervescent; slightly alkaline; clear smooth boundary.

C2—12 to 20 inches; brown (10YR 5/3) silt loam; few fine faint dark grayish brown (10YR 4/2) and grayish brown (10YR 5/2) iron depletions and prominent brown (7.5YR 4/4) iron masses; massive; very friable; few very fine roots; few fine masses of very dark grayish brown (10YR 3/2); slightly effervescent; slightly alkaline; abrupt smooth boundary.

C3—20 to 25 inches; dark grayish brown (10YR 4/2) silty clay loam, brown (10YR 5/3) in the lower part; few fine faint grayish brown (10YR 5/2) iron depletions and prominent brown (7.5YR 4/4) iron masses; moderate fine subangular blocky structure; firm; few very fine roots; slightly effervescent; slightly alkaline; abrupt smooth boundary.

C4—25 to 30 inches; finely mixed grayish brown (10YR 5/2) and brown (7.5YR 4/4) silt loam; massive; very friable; few very fine roots; slightly effervescent; slightly alkaline; abrupt smooth boundary.

C5—30 to 40 inches; yellowish brown (10YR 5/4) silty clay loam; many fine and medium distinct grayish brown (10YR 5/2) iron depletions; weak fine subangular blocky structure; friable; few very fine roots; clay content decreasing with increasing depth within the horizon; slightly effervescent; slightly alkaline; gradual smooth boundary.

C6—40 to 53 inches; light olive brown (2.5Y 5/3) silt loam; many fine distinct grayish brown (10YR 5/2) iron depletions, many fine distinct yellowish brown (10YR 5/4) iron masses, and common fine prominent yellowish brown (10YR 5/6) iron masses; massive; friable; few very fine roots; many fine black strata; few medium very dark grayish brown (10YR 3/2) strata; slightly effervescent; moderately alkaline; clear smooth boundary.

C7—53 to 65 inches; brown (10YR 5/3) silt loam; few fine faint grayish brown (10YR 5/2) iron depletions and few fine prominent brown (7.5YR 4/4) iron masses; massive; very friable; many fine dark strata; slightly effervescent; moderately alkaline.

Range in Characteristics

Ap horizon:

Hue—10YR

Value—3

Chroma—2

Texture of the fine-earth fraction—silt loam or silty clay loam

C horizon (upper part):

Hue—10YR or 2.5Y

Value—3 to 5

Chroma—1 to 4

Texture of the fine-earth fraction—silt loam or silty clay loam

C horizon (lower part):

Hue—10YR or 2.5Y

Value—4 or 5

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

Bonnefemme Series

Depth class: Moderately deep

Drainage class: Well drained

Permeability: Moderately slow

Landform: Hills on uplands

Position on the landform: Backslopes

Parent material: Fine-silty loess over clayey residuum derived from limestone

Slope range: 14 to 40 percent

Taxonomic classification: Fine, smectitic, mesic
Typic Hapludalfs

Typical Pedon

Bonnefemme silt loam, in an area of Rocheport-Bonnefemme complex, 14 to 25 percent slopes, 2,400 feet south and 200 feet east of the northwest corner of sec. 12, T. 45 N., R. 12 W.; USGS Jefferson City NW topographic quadrangle; latitude 38 degrees 41 minutes 41 seconds N.; longitude 92 degrees 14 minutes 7 seconds W.

Oi—0.5 inch to 0; 95 percent cover of undecomposed and partially decomposed leaf litter.

A—0 to 1 inch; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate very fine granular and subangular blocky structure; very friable; many very fine and few fine roots; slightly acid; abrupt wavy boundary.

E1—1 to 7 inches; light yellowish brown (10YR 6/4) silt loam; weak fine subangular blocky structure;

very friable; many very fine and fine, common medium, and few coarse roots; very strongly acid; gradual smooth boundary.

E2—7 to 10 inches; yellowish brown (10YR 5/6) silt loam; weak fine subangular blocky structure; very friable; common very fine, fine, and medium roots and few coarse roots; very strongly acid; clear smooth boundary.

Bt1—10 to 17 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium prismatic structure parting to moderate fine subangular blocky; friable; common faint silt coatings and common faint clay films on faces of peds; few very fine, common fine and medium, and few coarse roots; very strongly acid; clear smooth boundary.

2Bt2—17 to 28 inches; strong brown (7.5YR 5/6) silty clay; common medium distinct brown (7.5YR 5/3) mottles; weak medium prismatic structure parting to moderate fine and very fine subangular blocky; firm; common distinct clay films on faces of peds; few very fine, common fine, and few medium and coarse roots; 5 percent limestone and chert gravel; very strongly acid; abrupt wavy boundary.

2R—28 inches; fractured, decomposing limestone.

Range in Characteristics

Depth to bedrock: 20 to 40 inches

A horizon:

Hue—10YR

Value—2 to 4

Chroma—1 to 3

Texture of the fine-earth fraction—silt loam

E horizon:

Hue—10YR

Value—5 or 6

Chroma—3 to 6

Texture of the fine-earth fraction—silt loam

Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5

Chroma—4 to 6

Texture of the fine-earth fraction—silty clay loam or silty clay

2Bt horizon:

Hue—10YR to 5YR

Value—4 to 6

Chroma—3 to 8

Texture of the fine-earth fraction—silty clay or clay
Content of coarse fragments—0 to 15 percent

Cedargap Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landform: Flood plains in river valleys

Parent material: Gravelly alluvium

Slope range: 0 to 2 percent

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Cumulic Hapludolls

Typical Pedon

Cedargap silt loam, in an area of Cedargap-Dameron complex, 0 to 2 percent slopes, frequently flooded, about 900 feet east and 1,700 feet south of the northwest corner of sec. 13, T. 47 N., R. 13 W.; USGS Ashland topographic quadrangle; latitude 38 degrees 51 minutes 30 seconds N.; longitude 92 degrees 20 minutes 34 seconds W.

A1—0 to 4 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; moderate very fine granular and weak very fine subangular blocky structure; very friable; many very fine and fine roots and few medium roots; 3 percent gravel; slightly alkaline; clear wavy boundary.

A2—4 to 10 inches; dark brown (10YR 3/3) silt loam, grayish brown (10YR 5/2) dry; weak very fine and fine subangular blocky structure; friable; common very fine, many fine and medium, and common coarse roots; 5 percent gravel; slightly alkaline; gradual smooth boundary.

2A3—10 to 17 inches; dark brown (10YR 3/3) very cobbly silt loam, brown (10YR 5/3) dry; weak very fine subangular blocky structure; friable; common very fine to coarse roots; 15 percent gravel and 20 percent cobbles; neutral; clear smooth boundary.

2A4—17 to 27 inches; dark brown (7.5YR 3/2) extremely cobbly loam, brown (10YR 5/3) dry; weak very fine subangular blocky structure; firm; common very fine and fine roots and few medium roots; 35 percent gravel and 30 percent cobbles; neutral; abrupt smooth boundary.

2A5—27 to 35 inches; dark brown (10YR 3/3) very cobbly loam, brown (10YR 5/3) dry; weak very fine subangular blocky structure; firm; common very fine and fine roots and few medium and coarse roots; 20 percent gravel and 30 percent cobbles; neutral; abrupt smooth boundary.

3A6—35 to 60 inches; very dark brown (10YR 2/2) extremely cobbly clay loam, very dark grayish brown (10YR 3/2) dry; moderate very fine subangular blocky structure; firm; common fine

and medium roots; common pressure faces; 40 percent gravel and 40 percent cobbles; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 24 to more than 60 inches

Depth to the 2A horizon: 0 to 12 inches

A horizon:

Hue—10YR

Value—2 or 3

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

Content of coarse fragments—0 to 5 percent

2A horizon:

Hue—10YR or 7.5YR

Value—2 or 3

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam or loam

Content of coarse fragments—25 to 65 percent

3A horizon:

Hue—10YR

Value—2

Chroma—2

Texture of the fine-earth fraction—clay loam

Content of coarse fragments—80 percent

Clinkenbeard Series

Depth class: Moderately deep

Drainage class: Well drained

Permeability: Moderately slow

Landform: Hills on uplands

Position on the landform: Backslopes

Parent material: Clayey colluvium derived from limestone

Slope range: 20 to 70 percent

Taxonomic classification: Clayey-skeletal, mixed, superactive, mesic Typic Argiudolls

Typical Pedon

Clinkenbeard very flaggy clay loam, in an area of Clinkenbeard-Gasconade-Rock outcrop complex, 35 to 70 percent slopes, extremely stony, 600 feet north and 2,400 feet east of the southwest corner of sec. 20, T. 46 N., R. 11 W.; USGS Jefferson City NW topographic quadrangle; latitude 38 degrees 44 minutes 44 seconds N.; longitude 92 degrees 11 minutes 23 seconds W.

- Oi—0.5 inch to 0; 100 percent cover of undecomposed leaf litter; 80 percent of the surface covered with rock fragments.
- A—0 to 4 inches; dark brown (7.5YR 3/2) very flaggy clay loam, very dark grayish brown (10YR 3/2) dry; moderate fine granular and moderate very fine subangular blocky structure; friable; many very fine, fine, medium, and coarse roots; 20 percent limestone and chert channers, 30 percent limestone flagstones, and 10 percent stones; slightly alkaline; clear wavy boundary.
- AB—4 to 10 inches; dark brown (7.5YR 3/3) very flaggy silty clay loam; few dark brown (7.5YR 3/2) peds; brown (10YR 4/3) dry; moderate very fine subangular blocky structure; firm; many very fine, fine, medium, and coarse roots; 20 percent limestone and chert channers, 35 percent limestone flagstones, and 5 percent stones; slightly alkaline; gradual smooth boundary.
- Bt1—10 to 16 inches; brown (10YR 4/3) very flaggy silty clay; dark brown (10YR 3/3) faces of peds; brown (10YR 5/3) dry; moderate fine and very fine subangular blocky structure; firm; common faint clay films on faces of peds; common very fine and fine roots and many medium and coarse roots; 15 percent limestone and chert channers, 40 percent limestone flagstones, and 5 percent stones; slightly alkaline; gradual smooth boundary.
- Bt2—16 to 24 inches; dark yellowish brown (10YR 4/4) very flaggy silty clay; moderate fine subangular blocky structure; firm; common faint and few distinct clay films on faces of peds; common very fine, fine, medium, and coarse roots; 10 percent limestone and chert channers, 45 percent limestone flagstones, and 5 percent stones; slightly alkaline; abrupt wavy boundary.
- R—24 inches; hard, fractured dolomitic limestone; Bt2 material and roots extending down along the fractures.

Range in Characteristics

Depth to bedrock: 20 to 40 inches

A horizon:

Hue—7.5YR or 10YR

Value—2 or 3

Chroma—1 or 2

Texture of the fine-earth fraction—clay loam or silty clay

Content of coarse fragments—35 to 60 percent

AB horizon:

Hue—7.5YR or 10YR

Value—3

Chroma—2 or 3

Texture of the fine-earth fraction—silty clay loam or silty clay

Content of coarse fragments—35 to 60 percent

Bt horizon:

Hue—5YR to 10YR

Value—3 or 4

Chroma—3 to 6

Texture of the fine-earth fraction—silty clay or clay

Content of coarse fragments—35 to 60 percent

Dameron Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landform: Flood plains in river valleys

Parent material: Alluvium

Slope range: 0 to 2 percent

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Cumulic Hapludolls

Typical Pedon

Dameron silt loam, in an area of Cedargap-Dameron complex, 0 to 2 percent slopes, frequently flooded, 1,500 feet east and 2,400 feet north of the southwest corner of sec. 31, T. 47 N., R. 12 W.; USGS Ashland topographic quadrangle; latitude 38 degrees 49 minutes 23 seconds N.; longitude 92 degrees 18 minutes 33 seconds W.

A1—0 to 4 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; weak fine granular and weak very fine subangular blocky structure; very friable; many very fine and fine roots and common medium roots; 2 percent chert cobbles; slightly alkaline; clear wavy boundary.

A2—4 to 15 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; weak fine subangular blocky and weak very fine granular structure; very friable; many very fine to medium roots and few coarse roots; slightly alkaline; diffuse smooth boundary.

A3—15 to 27 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; weak medium subangular blocky and weak very fine granular structure; very friable; common fine and medium roots and few coarse roots; 2 percent chert gravel; slightly alkaline; clear smooth boundary.

A4—27 to 31 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 4/3) dry; weak fine subangular blocky structure; very friable; common

very fine to medium roots and few coarse roots; 5 percent chert gravel; slightly alkaline; clear smooth boundary.

2C1—31 to 46 inches; dark brown (7.5YR 3/2) very gravelly loam; weak very fine granular and subangular blocky structure; friable; common very fine to coarse roots; 55 percent chert gravel and 5 percent chert cobbles; slightly alkaline; diffuse smooth boundary.

2C2—46 to 60 inches; very dark grayish brown (10YR 3/2) very gravelly loam; weak very fine granular and subangular blocky structure; friable; few very fine to coarse roots; 55 percent gravel and 5 percent chert cobbles; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 24 to more than 60 inches

Depth to the 2C horizon: 24 to 32 inches

A horizon:

Hue—10YR

Value—3

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam or silty clay loam

Content of coarse fragments—0 to 5 percent

2C horizon:

Hue—10YR or 7.5YR

Value—3

Chroma—2 or 3

Texture of the fine-earth fraction—loam or sandy clay loam

Content of coarse fragments—20 to 60 percent

Darwin Series

Depth class: Very deep

Drainage class: Very poorly drained

Permeability: Very slow

Landform: Flood plains in river valleys

Parent material: Clayey alluvium

Slope range: 0 to 2 percent

Taxonomic classification: Fine, smectitic, mesic
Fluvaquentic Vertic Endoaquolls

Typical Pedon

Darwin silty clay loam, 0 to 2 percent slopes, occasionally flooded, 250 feet north and 2,200 feet west of the southeast corner of sec. 35, T. 48 N., R. 14 W.; USGS Huntsdale topographic quadrangle; latitude 38 degrees 54 minutes 10 seconds N.; longitude 92 degrees 28 minutes 4 seconds W.

Ap—0 to 7 inches; black (10YR 2/1) silty clay loam; moderate fine subangular blocky structure (weak fine granular structure in the upper part); firm; neutral; clear smooth boundary.

A—7 to 20 inches; black (10YR 2/1) silty clay loam; strong medium subangular blocky structure; firm; neutral; clear smooth boundary.

AB—20 to 24 inches; black (10YR 2/1) silty clay; few fine distinct brown (10YR 4/3) and dark yellowish brown (10YR 4/4) iron masses; strong medium subangular blocky structure; firm; neutral; clear smooth boundary.

Bg1—24 to 42 inches; dark gray (10YR 4/1) silty clay; many fine prominent dark yellowish brown (10YR 4/6) iron masses; strong fine subangular blocky structure; firm; neutral; diffuse smooth boundary.

Bg2—42 to 59 inches; gray (10YR 5/1) silty clay; common fine and medium prominent yellowish brown (10YR 5/6) iron masses; strong fine subangular blocky structure; firm; few fine black (10YR 2/1) organic stains lining pores; neutral; abrupt smooth boundary.

BCg—59 to 65 inches; gray (10YR 5/1) silty clay loam (stratified silt loam and silty clay); many medium prominent dark yellowish brown (10YR 4/6) iron masses; moderate fine subangular blocky structure in the silty clay; friable; few fine black (10YR 2/1) organic stains lining pores; neutral.

Range in Characteristics

Ap horizon:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay loam

Bg horizon:

Hue—10YR or 2.5Y

Value—4 or 5

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay, clay, or silty clay loam

BCg horizon:

Hue—10YR or 2.5Y

Value—5

Chroma—1 or 2

Texture of the fine-earth fraction—silt loam, silty clay loam, or silty clay

Freeburg Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Moderately slow

Landform: Stream terraces in river valleys

Parent material: Alluvium

Slope range: 2 to 5 percent

Taxonomic classification: Fine-silty, mixed, superactive, mesic Aquic Hapludalfs

Typical Pedon

Freeburg silt loam, 2 to 5 percent slopes, 825 feet south and 100 feet east of the northwest corner of sec. 29, T. 50 N., R. 13 W.; USGS Sturgeon SW topographic quadrangle; latitude 39 degrees 6 minutes 5 seconds N.; longitude 92 degrees 24 minutes 18 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; common very fine roots; slightly acid; abrupt smooth boundary.

EA—8 to 13 inches; very pale brown (10YR 7/3) silt loam; few fine distinct dark yellowish brown (10YR 4/6) iron masses; weak fine subangular blocky structure; friable; common very fine roots; slightly acid; abrupt smooth boundary.

E—13 to 18 inches; mixed light brownish gray (10YR 6/2) and light gray (10YR 7/2) silt loam; few fine prominent reddish yellow (7.5YR 7/6) iron masses around concretions; weak fine subangular blocky structure; friable; common fine and few medium and coarse iron and manganese concretions; few very fine roots; strongly acid; clear smooth boundary.

Bt1—18 to 24 inches; brown (10YR 5/3) silty clay loam; many fine faint light brownish gray (10YR 6/2) and few fine faint grayish brown (10YR 5/2) iron depletions and common fine prominent yellowish brown (10YR 5/8) iron masses; weak medium prismatic structure parting to moderate fine subangular blocky; firm; few prominent clay films in pores; many distinct white (10YR 8/2) silt coatings on faces of peds; few fine iron and manganese concretions; few very fine roots; very strongly acid; gradual smooth boundary.

Bt2—24 to 37 inches; brown (10YR 5/3) silty clay loam; common fine faint grayish brown (10YR 5/2) and light brownish gray (10YR 6/2) iron depletions and common fine distinct dark yellowish brown (10YR 4/4 and 4/6) iron masses; moderate medium prismatic structure parting to strong fine subangular blocky; firm; few prominent clay films in pores; few fine iron and manganese concretions; few prominent iron-manganese stains in pores; few very fine roots; very strongly acid; gradual smooth boundary.

Btg1—37 to 51 inches; grayish brown (10YR 5/2) silty

clay loam; many medium and coarse distinct dark yellowish brown (10YR 4/4 and 4/6) iron masses; moderate medium prismatic structure parting to moderate fine subangular blocky; firm; few prominent clay films in pores; few prominent iron-manganese stains in pores; few very fine roots; strongly acid; gradual smooth boundary.

Btg2—51 to 65 inches; grayish brown (10YR 5/2) silt loam; many medium and coarse prominent yellowish brown (10YR 5/6) iron masses; moderate medium subangular blocky structure; firm; few distinct dark grayish brown (10YR 4/2) clay films; slightly acid.

Range in Characteristics

Ap horizon:

Hue—10YR

Value—3 or 4

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

E horizon:

Hue—10YR

Value—5 to 7

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

Bt horizon:

Hue—10YR

Value—4 or 5

Chroma—3 or 4

Texture of the fine-earth fraction—silty clay loam

Btg horizon:

Hue—10YR

Value—4 or 5

Chroma—2 to 4

Texture of the fine-earth fraction—silty clay loam or silt loam

Gasconade Series

Depth class: Shallow

Drainage class: Well drained

Permeability: Moderately slow

Landform: Hills on uplands

Position on the landform: Backslopes

Parent material: Gravelly residuum derived from limestone

Slope range: 35 to 70 percent

Taxonomic classification: Clayey-skeletal, mixed, superactive, mesic Lithic Hapludolls

Typical Pedon

Gasconade very flaggy clay loam, in an area of

Clinkenbeard-Gasconade-Rock outcrop complex, 35 to 70 percent slopes, extremely stony, 500 feet north and 1,200 feet east of the southwest corner of sec. 20, T. 46 N., R. 11 W.; USGS Jefferson City NW topographic quadrangle; latitude 38 degrees 44 minutes 40 seconds N.; longitude 92 degrees 12 minutes 35 seconds W.

Oi—0.5 inch to 0; 100 percent cover of cedar needles and leaves; 70 percent of the surface covered with rock fragments; abrupt smooth boundary.

A1—0 to 2 inches; black (10YR 2/1) very flaggy clay loam, very dark grayish brown (10YR 3/2) dry; moderate very fine granular and subangular blocky structure; friable; many very fine to coarse roots; 10 percent channers, 40 percent flagstones, and 2 percent stones; neutral; clear wavy boundary.

A2—2 to 13 inches; very dark grayish brown (10YR 3/2) extremely cobbly silty clay, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure parting to moderate very fine subangular blocky; friable; many very fine to coarse roots; 5 percent gravel, 60 percent cobbles, and 2 percent stones; slightly alkaline; abrupt irregular boundary.

R—13 inches; hard, fractured limestone; A2 material and roots along fractures.

Range in Characteristics

Depth to bedrock: 10 to 20 inches

A1 horizon:

Hue—10YR

Value—2 or 3

Chroma—1 to 3

Texture of the fine-earth fraction—clay loam

Content of coarse fragments—35 to 60 percent

A2 horizon:

Hue—10YR

Value—3

Chroma—2 or 3

Texture of the fine-earth fraction—silty clay or clay

Content of coarse fragments—35 to 70 percent

Harvester Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Moderately slow

Landform: Ridges on uplands

Position on the landform: Summits

Parent material: Fine-silty loess

Slope range: 2 to 9 percent

Taxonomic classification: Fine-silty, mixed, superactive, nonacid, mesic Oxyaquic Udorthents

Typical Pedon

Harvester silty clay loam, in an area of Urban land-Harvester complex, 2 to 9 percent slopes, 1,800 feet east and 300 feet south of the northwest corner of sec. 36, T. 48 N., R. 13 W.; USGS Columbia topographic quadrangle; latitude 38 degrees 55 minutes 25 seconds N.; longitude 92 degrees 20 minutes 17 seconds W.

C1—0 to 6 inches; brown (10YR 5/3) silty clay loam; common fine distinct yellowish brown (10YR 5/6) mottles; weak thin platy structure parting to moderate very fine subangular blocky; firm; common very fine roots; few manganese stains; strongly acid; abrupt smooth boundary.

C2—6 to 30 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct strong brown (7.5YR 4/6) mottles; weak coarse subangular blocky structure; firm; few very fine roots; few manganese stains; strongly acid; clear smooth boundary.

C3—30 to 60 inches; grayish brown (10YR 5/2) and yellowish brown (10YR 5/4) clay loam; common fine distinct strong brown (7.5YR 5/8) mottles; massive; firm; common sand grains; strongly acid.

Range in Characteristics

C horizon:

Hue—10YR

Value—4 or 5

Chroma—2 or 3

Texture of the fine-earth fraction—silty clay loam, silt loam, or clay loam

Hatton Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Very slow

Landform: Hills on uplands

Position on the landform: Shoulders

Parent material: Loess over fine-silty pedisegment

Slope range: 2 to 5 percent

Taxonomic classification: Fine, smectitic, mesic Oxyaquic Vertic Hapludalfs

Typical Pedon

Hatton silt loam, 2 to 5 percent slopes, eroded, 400 feet west and 200 feet south of the northeast corner of

sec. 6, T. 51 N., R. 13 W.; USGS Harrisburg topographic quadrangle; latitude 39 degrees 14 minutes 49 seconds N.; longitude 92 degrees 24 minutes 42 seconds W.

Ap—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; friable; many very fine and common fine roots; moderately acid; abrupt smooth boundary.

E—3 to 6 inches; brown (10YR 5/3) silt, pale brown (10YR 6/3) dry; weak thin platy structure; very friable; common very fine and fine roots; common dark grayish brown (10YR 4/2) wormcasts and dark yellowish brown (10YR 4/6) patches; common silt coatings and common manganese or iron-manganese stains on faces of peds; common iron-manganese concretions throughout; moderately acid; clear smooth boundary.

Bt1—6 to 12 inches; yellowish brown (10YR 5/4) silty clay loam; common fine faint brown (10YR 5/3) iron depletions in the matrix; weak fine subangular blocky structure; firm; common fine roots; common silt coatings and common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; common manganese or iron-manganese stains on faces of peds and common iron-manganese concretions throughout; very strongly acid; clear smooth boundary.

Bt2—12 to 25 inches; dark yellowish brown (10YR 4/4) silty clay; common fine faint brown (10YR 5/3) iron depletions in the matrix; moderate medium subangular blocky structure parting to moderate fine subangular blocky; very firm; few very fine and fine roots; common silt coatings and common manganese or iron-manganese stains and many distinct yellowish brown (10YR 5/4) clay films on faces of peds; common iron-manganese concretions throughout; extremely acid; clear smooth boundary.

Bt3—25 to 32 inches; yellowish brown (10YR 5/4) silty clay; common medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; moderate medium subangular blocky structure parting to weak fine subangular blocky; very firm; few very fine and fine roots; common silt coatings and common manganese or iron-manganese stains and common distinct brown (10YR 4/3) clay films on faces of peds; common iron-manganese concretions throughout; extremely acid; clear smooth boundary.

2Btx—32 to 48 inches; dark yellowish brown (10YR 4/4), grayish brown (10YR 5/2), and yellowish

brown (10YR 5/4) silty clay loam; weak medium subangular blocky structure; very firm; brittle; common distinct brown (10YR 4/3) clay films on faces of peds; common silt coatings and common manganese or iron-manganese stains on faces of peds; common iron-manganese concretions throughout; very strongly acid; clear smooth boundary.

2Bt—48 to 60 inches; dark yellowish brown (10YR 4/4), grayish brown (10YR 5/2), and yellowish brown (10YR 5/4) silt loam; moderate fine prismatic structure parting to weak fine subangular blocky; very firm; common distinct brown (10YR 4/3) clay films on faces of peds; common silt coatings and common manganese or iron-manganese stains on faces of peds; common iron-manganese concretions throughout; moderately acid.

Range in Characteristics

Ap or A horizon:

Hue—10YR

Value—3 to 5

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

E horizon:

Hue—10YR

Value—5 or 6

Chroma—3 or 4

Texture of the fine-earth fraction—silt loam or silt

Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5

Chroma—3 to 6

Texture of the fine-earth fraction—silty clay loam or silty clay

2Btx horizon:

Hue—10YR

Value—4 to 6

Chroma—2 to 4

Texture of the fine-earth fraction—silty clay loam or silt loam

2Bt horizon:

Hue—10YR

Value—4 to 6

Chroma—2 to 6

Texture of the fine-earth fraction—silt loam or silty clay loam

2C horizon (if it occurs):

Hue—2.5Y

Value—4 to 6
 Chroma—2 to 4
 Texture of the fine-earth fraction—silty clay loam

Haymond Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landform: Flood plains in river valleys
Parent material: Coarse-silty alluvium
Slope range: 0 to 3 percent

Taxonomic classification: Coarse-silty, mixed, superactive, mesic Dystric Fluventic Eutrudepts

Typical Pedon

Haymond silt loam, 0 to 3 percent slopes, frequently flooded, 2,500 feet west and 2,000 feet south of the northeast corner of sec. 6, T. 45 N., R. 12 W.; USGS Hartsburg topographic quadrangle; latitude 38 degrees 42 minutes 43 seconds N.; longitude 92 degrees 19 minutes 10 seconds W.

- Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak very fine granular and weak very fine subangular blocky structure; very friable; slightly alkaline; clear smooth boundary.
- Bw—7 to 22 inches; mixed brown (10YR 4/3) and yellowish brown (10YR 5/4) silt loam; common fine and medium faint brown (10YR 5/3) mottles; weak fine subangular blocky structure; very friable; slightly alkaline; abrupt smooth boundary.
- C1—22 to 26 inches; silt loam, finely stratified with brown (10YR 5/3) and yellowish brown (10YR 5/4); few fine distinct brown (7.5YR 4/4) mottles and fine strata; massive; very friable; slightly alkaline; abrupt smooth boundary.
- C2—26 to 44 inches; brown (10YR 4/3) silt loam; common fine and medium faint brown (10YR 5/3) and yellowish brown (10YR 5/4) mottles; massive; very friable; slightly alkaline; gradual smooth boundary.
- Ab—44 to 60 inches; dark brown (10YR 3/3) silt loam; massive; very friable; slightly alkaline.

Range in Characteristics

Ap horizon:
 Hue—10YR
 Value—4 or 5
 Chroma—2 to 4
 Texture of the fine-earth fraction—silt loam

Bw horizon:
 Hue—10YR

Value—4 or 5
 Chroma—3 or 4
 Texture of the fine-earth fraction—silt loam

C horizon:

Hue—10YR
 Value—4 or 5
 Chroma—3 or 4
 Texture of the fine-earth fraction—silt loam or loam

Ab horizon:

Hue—10YR
 Value—3
 Chroma—3
 Texture of the fine-earth fraction—silt loam

Haynie Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landform: Flood plains in river valleys
Parent material: Alluvium
Slope range: 0 to 2 percent

Taxonomic classification: Coarse-silty, mixed, superactive, calcareous, mesic Mollic Udifluvents

Typical Pedon

Haynie loam, 0 to 2 percent slopes, occasionally flooded, 2,700 feet east and 1,800 feet south of the northwest corner of sec. 7, T. 45 N., R. 12 W.; USGS Hartsburg topographic quadrangle; latitude 38 degrees 41 minutes 52 seconds N.; longitude 92 degrees 19 minutes 22 seconds W.

- Ap—0 to 5 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak very fine granular and subangular blocky structure; very friable; slightly alkaline; clear smooth boundary.
- A—5 to 13 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak very fine subangular blocky structure; very friable; few bits of bark and wood; slightly alkaline; abrupt wavy boundary.
- C1—13 to 20 inches; mixed dark grayish brown (10YR 4/2) and grayish brown (2.5Y 5/2) very fine sandy loam; massive; very friable; moderately alkaline; clear wavy boundary.
- C2—20 to 34 inches; grayish brown (10YR 5/2) very fine sandy loam; massive; loose; slightly effervescent; moderately alkaline; clear wavy boundary.

- C3—34 to 46 inches; finely stratified dark grayish brown (10YR 4/2) and grayish brown (2.5Y 5/2) silt loam; few very fine strata of very dark grayish brown (2.5Y 3/2); common fine prominent strong brown (7.5YR 4/6) mottles; massive; very friable; slightly effervescent; moderately alkaline; clear smooth boundary.
- C4—46 to 66 inches; grayish brown (10YR 5/2) very fine sandy loam; massive; loose; slightly effervescent; moderately alkaline.

Range in Characteristics

Ap horizon:

Hue—10YR

Value—3

Chroma—2

Texture of the fine-earth fraction—loam or silt loam

C horizon:

Hue—10YR or 2.5Y

Value—4 or 5

Chroma—2 or 3

Texture of the fine-earth fraction—very fine sandy loam or silt loam with thin strata of coarser or finer textures

Jemerson Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landform: Stream terraces in river valleys

Parent material: Fine-silty alluvium

Slope range: 0 to 3 percent

Taxonomic classification: Fine-silty, mixed, superactive, mesic Typic Hapludalfs

Typical Pedon

Jemerson silt loam, 0 to 3 percent slopes, rarely flooded, 1,700 feet east and 1,300 feet south of the northwest corner of sec. 5, T. 45 N., R. 12 W.; USGS Hartsburg topographic quadrangle; latitude 38 degrees 42 minutes 48 seconds N.; longitude 92 degrees 18 minutes 17 seconds W.

Ap1—0 to 5 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine subangular blocky structure; very friable; common very fine roots; slightly acid; clear smooth boundary.

Ap2—5 to 11 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine subangular blocky structure; very friable; common very fine

roots; few medium patches of brown (10YR 4/3); slightly acid; clear smooth boundary.

Bt1—11 to 25 inches; yellowish brown (10YR 5/4) silt loam; moderate fine prismatic structure parting to moderate fine subangular blocky; firm; common very fine roots; many faint dark yellowish brown (10YR 4/4) clay films on faces of peds; moderately acid; gradual smooth boundary.

Bt2—25 to 41 inches; dark yellowish brown (10YR 4/4) silt loam; moderate fine prismatic structure parting to weak medium subangular blocky; firm; common very fine roots; common faint clay films; few distinct brown (10YR 4/3) clay films on vertical faces of peds; few faint brown (10YR 5/3) silt coatings on vertical faces of peds; strongly acid; clear smooth boundary.

Bt3—41 to 56 inches; dark yellowish brown (10YR 4/4) silt loam; many fine very dark grayish brown (10YR 3/2) manganese stains and common medium brown (10YR 5/3) mottles; weak medium subangular blocky structure; friable; few very fine roots; few faint brown (10YR 4/3) clay films on vertical faces of peds; moderately acid; clear smooth boundary.

Bt4—56 to 67 inches; mixed pale brown (10YR 6/3) and yellowish brown (10YR 5/6) silt loam; many fine very dark grayish brown (10YR 3/2) manganese stains; weak medium subangular blocky structure; friable; few very fine roots; very few faint brown (10YR 4/3) clay films; moderately acid.

Range in Characteristics

Ap horizon:

Hue—10YR

Value—3 or 4

Chroma—3

Texture of the fine-earth fraction—silt loam

Bt horizon:

Hue—10YR or 7.5YR

Value—4 to 6

Chroma—3 to 6

Texture of the fine-earth fraction—silt loam, loam, or silty clay loam

Keswick Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Slow

Landform: Hills on uplands

Position on the landform: Backslopes

Parent material: Loess over clayey till

Slope range: 5 to 14 percent

Taxonomic classification: Fine, smectitic, mesic
Aquertic Chromic Hapludalfs

Typical Pedon

Keswick silt loam, 5 to 9 percent slopes, eroded, 1,400 feet east and 1,600 feet south of the northwest corner of sec. 27, T. 49 N., R. 11 W.; USGS Hallsville topographic quadrangle; latitude 39 degrees 0 minutes 11 seconds N.; longitude 92 degrees 8 minutes 10 seconds W.

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; few masses of material from the 2Bt1 horizon in the lower part; moderate medium subangular blocky structure parting to moderate fine subangular blocky; friable; many fine roots; strongly acid; clear smooth boundary.

2Bt1—7 to 13 inches; strong brown (7.5YR 5/6) clay; many medium prominent red (2.5YR 4/6) iron masses; moderate medium subangular blocky structure parting to moderate fine subangular blocky; firm; common faint clay films on faces of peds; common fine roots; common fine and medium sand grains; very strongly acid; clear smooth boundary.

2Bt2—13 to 20 inches; brown (7.5YR 5/4) clay; many medium prominent red (2.5YR 4/6) iron masses; common fine distinct light brownish gray (10YR 6/2) iron depletions; moderate medium subangular blocky structure parting to moderate fine subangular blocky; firm; common faint clay films on faces of peds; common fine roots; common fine and medium sand grains; very strongly acid; gradual smooth boundary.

2Btg1—20 to 33 inches; grayish brown (10YR 5/2) clay loam; many medium prominent strong brown (7.5YR 5/6) and common medium prominent yellowish red (5YR 5/6) iron masses; weak medium prismatic structure parting to moderate medium subangular blocky; firm; common faint clay films on faces of peds; few very fine roots; common fine sand grains; very strongly acid; gradual smooth boundary.

2Btg2—33 to 44 inches; gray (10YR 5/1) clay loam; common medium prominent strong brown (7.5YR 5/6) iron masses; weak medium prismatic structure parting to weak medium subangular blocky; firm; common faint clay films on faces of peds; few very fine roots; common fine sand grains; very strongly acid; diffuse smooth boundary.

2Btg3—44 to 60 inches; grayish brown (2.5Y 5/2) clay

loam; common medium prominent strong brown (7.5YR 5/6) iron masses; weak medium prismatic structure parting to weak medium subangular blocky; very firm; few faint clay films on faces of peds; common fine sand grains; very strongly acid.

Range in Characteristics

Ap horizon:

Hue—10YR

Value—3 or 4

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

2Bt horizon:

Hue—7.5YR

Value—4 or 5

Chroma—3 to 6

Texture of the fine-earth fraction—clay loam or clay

2Btg horizon:

Hue—10YR or 2.5Y

Value—5

Chroma—1 or 2

Texture of the fine-earth fraction—clay loam or silty clay loam

Lenzburg Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderately slow

Landform: Hills on uplands

Position on the landform: Backslopes

Parent material: Fine-loamy mine spoil or earthy fill derived from calcareous shale

Slope range: 2 to 70 percent

Taxonomic classification: Fine-loamy, mixed, active, calcareous, mesic Haplic Udarents

Typical Pedon

Lenzburg channery silty clay loam, 9 to 70 percent slopes, 1,400 feet west and 1,200 feet south of the northeast corner of sec. 18, T. 49 N., R. 12 W.; USGS Browns topographic quadrangle; latitude 39 degrees 2 minutes 3 seconds N.; longitude 92 degrees 18 minutes 49 seconds W.

A—0 to 5 inches; brown (10YR 5/3) channery silty clay loam; common fine distinct gray (10YR 6/1) lithochromic mottles; weak fine subangular blocky structure with pockets of weak fine granular structure; firm; common faint iron and manganese

stains; common very fine and fine roots and few medium roots; 15 percent shale channers; slightly alkaline; clear smooth boundary.

- C1—5 to 12 inches; variegated brown (10YR 5/3) and yellowish brown (10YR 5/6) gravelly silty clay loam; common medium prominent dark gray (2.5Y 4/1) and light brownish gray (2.5Y 6/2) lithochromic mottles; weak medium prismatic structure parting to intermittent weak fine and medium subangular blocky; firm; common faint iron and manganese stains; few fine iron and manganese concretions; few very fine, fine, and medium roots; 20 percent shale gravel; slightly effervescent; slightly alkaline; clear wavy boundary.
- C2—12 to 34 inches; mixed brown (10YR 5/3) and yellowish brown (10YR 5/6) gravelly silty clay loam; common coarse prominent gray (10YR 6/1) lithochromic mottles; weak medium prismatic structure parting to weak fine and medium subangular blocky; very firm; few faint iron and manganese stains; few fine iron and manganese concretions; few very fine and fine roots; 20 percent shale gravel and 10 percent shale cobbles; slightly effervescent; slightly alkaline; clear wavy boundary.
- C3—34 to 50 inches; variegated strong brown (7.5YR 5/6), yellowish brown (10YR 5/4), and gray (2.5Y 5/1) cobbly silty clay loam; massive; very firm; few faint iron and manganese stains; few fine iron and manganese concretions; few fine gypsum crystals on fracture planes; few fine and medium roots; 5 percent shale gravel, 25 percent shale cobbles, and 5 percent shale stones; intermittent violent effervescence; slightly alkaline; clear wavy boundary.
- C4—50 to 60 inches; gray (2.5Y 5/1) silty clay loam; many coarse patches of distinct reddish brown (2.5YR 5/3) and prominent olive (5Y 5/3) lithochromic mottles; massive; very firm; few faint iron and manganese stains; few fine iron and manganese concretions; few medium roots; few fine white pebbles; slightly effervescent; slightly alkaline.

Range in Characteristics

A horizon:

Hue—10YR or 2.5Y

Value—4 or 5

Chroma—1 to 3

Texture of the fine-earth fraction—silty clay loam

Content of coarse fragments—10 to 30 percent

C horizon:

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—1 to 6

Texture of the fine-earth fraction—silt loam, silty clay loam, or clay loam

Content of coarse fragments—0 to 35 percent

Leonard Series

Depth class: Very deep

Drainage class: Poorly drained

Permeability: Slow

Landform: Ridges on uplands

Position on the landform: Shoulders

Parent material: Fine-silty loess over till

Slope range: 2 to 6 percent

Taxonomic classification: Fine, smectitic, mesic
Vertic Epiaqualfs

Typical Pedon

Leonard silt loam, 2 to 6 percent slopes, eroded, 2,650 feet east and 1,600 feet north of the southwest corner of sec. 4, T. 51 N., R. 11 W.; USGS Centralia topographic quadrangle; latitude 39 degrees 13 minutes 51 seconds N.; longitude 92 degrees 9 minutes 23 seconds W.

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; common very fine roots; neutral; abrupt smooth boundary.
- Btg1—8 to 11 inches; dark gray (10YR 4/1) silty clay; few fine prominent yellowish red (5YR 4/6) and common fine prominent yellowish brown (10YR 5/6) iron masses; moderate fine subangular blocky structure; firm; few very fine roots; common distinct clay films on faces of peds; very strongly acid; clear smooth boundary.
- Btg2—11 to 20 inches; dark gray (10YR 4/1) silty clay; many fine prominent yellowish brown (10YR 5/6) iron masses; weak fine subangular blocky structure; firm; few very fine roots; many distinct clay films on faces of peds; very strongly acid; gradual smooth boundary.
- Btg3—20 to 26 inches; gray (10YR 5/1) silty clay loam; few fine prominent yellowish red (5YR 5/6) and many fine prominent strong brown (7.5YR 4/6) iron masses; weak fine subangular blocky structure; firm; few very fine roots; many distinct clay films on faces of peds; strongly acid; clear smooth boundary.
- 2Btg4—26 to 42 inches; gray (10YR 5/1) silty clay loam; few fine prominent yellowish red (5YR 4/6) iron masses; weak medium prismatic structure parting to weak medium subangular blocky; firm;

15 percent sand; many distinct clay films on faces of peds; strongly acid; clear smooth boundary.

2Btg5—42 to 60 inches; gray (10YR 5/1) silty clay loam; common fine prominent strong brown (7.5YR 4/6) iron masses; weak medium prismatic structure parting to weak fine subangular blocky; firm; 15 percent sand; few faint clay films in root channels and few iron-manganese stains; strongly acid.

Range in Characteristics

Ap horizon:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture of the fine-earth fraction—silt loam

Btg horizon:

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay loam, clay, or silty clay

2Btg horizon:

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay loam or silty clay

Leta Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Slow in the upper part and moderate in the lower part

Landform: Flood-plain steps in river valleys

Parent material: Alluvium

Slope range: 0 to 2 percent

Taxonomic classification: Clayey over loamy, smectitic, mesic Fluvaqueptic Hapludolls

Typical Pedon

Leta silty clay, 0 to 2 percent slopes, occasionally flooded, 50 feet east and 2,600 feet north of the southwest corner of sec. 13, T. 47 N., R. 14 W.; USGS Jamestown topographic quadrangle; latitude 38 degrees 49 minutes 32 seconds N.; longitude 92 degrees 24 minutes 30 seconds W.

Ap—0 to 6 inches; very dark gray (10YR 3/1) silty clay, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure (moderate

very fine granular structure in the upper part); firm; slightly effervescent; slightly alkaline; abrupt smooth boundary.

A—6 to 22 inches; black (10YR 2/1) silty clay, very dark gray (10YR 3/1) dry; strong fine and medium subangular blocky structure; firm; thin layer of dark grayish brown (10YR 4/2) silt loam in the lower part; slightly effervescent; slightly alkaline; abrupt smooth boundary.

Bg—22 to 30 inches; dark gray (10YR 4/1) silty clay; very dark gray (10YR 3/1) faces of peds and few fine prominent strong brown (7.5YR 4/6) iron masses in pores; moderate medium subangular blocky structure; firm; masses of brown (10YR 4/3) silt loam in the lower part; slightly effervescent; slightly alkaline; clear smooth boundary.

2Cg1—30 to 44 inches; dark grayish brown (10YR 4/2), stratified very fine sandy loam and silt loam; few fine faint dark gray (10YR 4/1) iron depletions and few fine prominent strong brown (7.5YR 4/6) iron masses in pores; massive; loose; strongly effervescent; moderately alkaline; clear smooth boundary.

2Cg2—44 to 65 inches; dark grayish brown (10YR 4/2) silt loam; massive; loose; strongly effervescent; moderately alkaline; clear smooth boundary.

2Cg3—65 to 72 inches; dark gray (10YR 4/1) silt loam; common medium prominent strong brown (7.5YR 4/6) iron masses and few fine faint dark grayish brown (10YR 4/2) iron depletions; massive; friable; strata of silty clay loam; slightly effervescent; moderately alkaline.

Range in Characteristics

Ap horizon:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay

Bg horizon:

Hue—10YR

Value—3 or 4

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay or silty clay loam

2Cg horizon:

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 or 2

Texture of the fine-earth fraction—very fine sandy loam or silt loam

Marion Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Very slow

Landform: Ridges on uplands

Position on the landform: Summits

Parent material: Clayey loess

Slope range: 1 to 3 percent

Taxonomic classification: Fine, smectitic, mesic
Aquertic Chromic Hapludalfs

Typical Pedon

Marion silt loam, 1 to 3 percent slopes, 1,200 feet east and 700 feet north of the southwest corner of sec. 25, T. 51 N., R. 12 W.; USGS Centralia topographic quadrangle; latitude 37 degrees 10 minutes 18 seconds N.; longitude 92 degrees 12 minutes 29 seconds W.

O—1 inch to 0; thin layer of leaves and twigs.

A—0 to 3 inches; grayish brown (10YR 5/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; common very fine and few fine roots; very strongly acid; abrupt smooth boundary.

E—3 to 11 inches; light brownish gray (10YR 6/2) silt loam; common fine distinct light yellowish brown (10YR 6/4) and brownish yellow (10YR 6/6) iron masses; weak thin platy structure; very friable; common fine roots; few fine iron and manganese stains; very strongly acid; abrupt smooth boundary.

Bt1—11 to 17 inches; yellowish brown (10YR 5/4) silty clay; common fine distinct grayish brown (10YR 6/2) iron depletions and strong brown (7.5YR 5/6) iron masses; moderate medium subangular blocky structure; firm; common distinct clay films and few gray (5Y 5/1) clay masses; few very fine roots; extremely acid; clear wavy boundary.

Bt2—17 to 27 inches; yellowish brown (10YR 5/4) silty clay; few fine distinct grayish brown (10YR 5/2) iron depletions; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; few very fine roots; extremely acid; clear wavy boundary.

Btg1—27 to 41 inches; light brownish gray (10YR 6/2) silty clay loam; common fine distinct strong brown (7.5YR 5/6) and reddish yellow (7.5YR 6/6) iron masses; weak medium prismatic structure parting to weak medium subangular blocky; friable; few faint clay films on faces of peds; few fine iron and manganese stains; few fine roots; extremely acid; clear wavy boundary.

Btg2—41 to 52 inches; light brownish gray (10YR 6/2) silty clay loam; common fine distinct brown (7.5YR 5/4) and few fine distinct yellowish red (5YR 5/6) iron masses; weak very fine subangular blocky structure; firm; few faint clay films on faces of peds; common iron and manganese stains; common very fine sand grains; few very fine roots; extremely acid; clear wavy boundary.

2BCg—52 to 60 inches; light gray (10YR 7/2) silt loam; common fine distinct brownish yellow (10YR 6/6 and 6/8) iron masses; weak very fine subangular blocky structure; friable; few faint clay films along root channels; few fine iron and manganese stains; few very fine roots; strongly acid.

Range in Characteristics

A or Ap horizon:

Hue—10YR

Value—3 to 5

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

E horizon:

Hue—10YR

Value—5 to 7

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

Bt horizon:

Hue—10YR

Value—4 to 6

Chroma—3 or 4

Texture of the fine-earth fraction—silty clay

Btg horizon:

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay loam

2BCg or 2Btg horizon:

Hue—10YR or 2.5Y

Value—5 to 7

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay loam or silt loam

Menfro Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landform: Hills on uplands

Position on the landform: Shoulders or backslopes

Parent material: Fine-silty loess

Slope range: 3 to 45 percent

Taxonomic classification: Fine-silty, mixed, superactive, mesic Typic Hapludalfs

Typical Pedon

Menfro silt loam, 20 to 45 percent slopes, 1,050 feet north and 2,600 feet east of the southwest corner of sec. 36, T. 46 N., R. 13 W.; USGS Hartsburg topographic quadrangle; latitude 38 degrees 43 minutes 15 seconds N.; longitude 92 degrees 20 minutes 29 seconds W.

A—0 to 3 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; moderate fine granular structure; very friable; many fine roots; moderately acid; clear smooth boundary.

E—3 to 6 inches; brown (10YR 4/3) silt loam; moderate medium granular structure; very friable; many fine and few medium roots; strongly acid; clear smooth boundary.

BE—6 to 11 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure parting to moderate medium granular; very friable; many distinct pale brown (10YR 6/3) silt coatings on faces of peds; many fine and few medium roots; very strongly acid; clear smooth boundary.

Bt1—11 to 17 inches; dark yellowish brown (10YR 4/6) silty clay loam; moderate medium subangular blocky structure parting to moderate fine subangular blocky; friable; many distinct pale brown (10YR 6/3) silt coatings and many distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; many fine and few medium roots; very strongly acid; gradual smooth boundary.

Bt2—17 to 24 inches; yellowish brown (10YR 5/4) silty clay loam; strong coarse subangular blocky structure parting to strong medium subangular blocky; firm; many distinct pale brown (10YR 6/3) silt coatings and many distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; many fine and few medium roots; very strongly acid; gradual smooth boundary.

Bt3—24 to 33 inches; dark yellowish brown (10YR 4/6) silty clay loam; strong medium prismatic structure parting to strong medium subangular blocky; firm; many distinct pale brown (10YR 6/3) silt coatings and many distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; common very fine and common fine roots; very strongly acid; gradual smooth boundary.

Bt4—33 to 40 inches; brown (7.5YR 4/4) silty clay

loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common distinct pale brown (10YR 6/3) silt coatings and common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; common very fine and common fine roots; very strongly acid; gradual smooth boundary.

Bt5—40 to 51 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; friable; common distinct pale brown (10YR 6/3) silt coatings and common distinct strong brown (7.5YR 4/6) clay films on faces of peds; common very fine and few fine roots; very strongly acid; gradual smooth boundary.

Bt6—51 to 62 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine prismatic structure; friable; common distinct light brownish gray (10YR 6/2) silt coatings and common distinct strong brown (7.5YR 4/6) clay films on faces of peds; few very fine roots; very strongly acid; gradual smooth boundary.

Bt7—62 to 80 inches; yellowish brown (10YR 5/4) silt loam; moderate fine subangular blocky structure; friable; common distinct light brownish gray (10YR 6/2) silt coatings and common distinct strong brown (7.5YR 4/6) clay films on faces of peds; few iron and manganese stains; few fine roots; very strongly acid.

Range in Characteristics

A horizon:

Hue—10YR

Value—2 to 4

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

Ap horizon (if it occurs):

Hue—10YR

Value—3 or 4

Chroma—2 to 4

Texture of the fine-earth fraction—silt loam

E horizon:

Hue—10YR

Value—4 or 5

Chroma—3 or 4

Texture of the fine-earth fraction—silt loam

BE horizon:

Hue—10YR or 7.5YR

Value—4

Chroma—3 or 4

Texture of the fine-earth fraction—silt loam or silty clay loam

Bt horizon:

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 to 6

Texture of the fine-earth fraction—silty clay loam or silt loam

Mexico Series*Depth class:* Very deep*Drainage class:* Somewhat poorly drained*Permeability:* Very slow*Landform:* Ridges on uplands*Position on the landform:* Summits*Parent material:* Loess over pedisegment*Slope range:* 1 to 3 percent**Taxonomic classification:** Fine, smectitic, mesic
Aeric Vertic Epiaqualfs**Typical Pedon**

Mexico silt loam, 1 to 3 percent slopes, 500 feet east and 2,200 feet south of the northwest corner of sec. 9, T. 49 N., R. 11 W.; USGS Hallsville topographic quadrangle; latitude 39 degrees 2 minutes 11 seconds N.; longitude 92 degrees 9 minutes 25 seconds W.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak medium granular structure; very friable; many fine and very fine roots; neutral; clear smooth boundary.

E—7 to 10 inches; grayish brown (10YR 5/2) silt loam; weak medium platy structure parting to moderate fine subangular blocky; very friable; common faint clay depletions; many fine and very fine roots; moderately acid; clear smooth boundary.

BE—10 to 13 inches; grayish brown (10YR 5/2) silty clay loam; few fine prominent red (2.5YR 4/6) iron masses; moderate fine subangular blocky structure; very friable; common faint clay depletions; common fine and very fine roots; very strongly acid; clear smooth boundary.

Btg1—13 to 18 inches; dark grayish brown (10YR 4/2) silty clay; many fine prominent red (2.5YR 4/6) iron masses; moderate medium subangular blocky structure parting to moderate fine subangular blocky; firm; common faint clay films on faces of peds; few fine and common very fine roots; very strongly acid; gradual smooth boundary.

Btg2—18 to 27 inches; grayish brown (2.5Y 5/2) silty clay; many coarse prominent strong brown (7.5YR 4/6) iron masses; moderate medium subangular blocky structure; firm; common fine iron and manganese stains; few faint clay films on faces of

peds; few very fine roots; very strongly acid; gradual smooth boundary.

2Btg3—27 to 45 inches; grayish brown (10YR 5/2) silty clay loam; common fine prominent strong brown (7.5YR 4/6) iron masses; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; common fine iron and manganese stains; few very fine roots; very strongly acid; clear smooth boundary.

2Btg4—45 to 60 inches; gray (10YR 5/1) silty clay loam; many fine prominent strong brown (7.5YR 4/6) iron masses; weak medium prismatic structure parting to weak medium subangular blocky; firm; few faint clay films on faces of peds; very few very fine roots; few very fine sand grains; strongly acid.

Range in Characteristics*Ap horizon:*

Hue—10YR

Value—2 or 3

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

E or BE horizon:

Hue—10YR

Value—4 or 5

Chroma—2

Texture of the fine-earth fraction—silt loam

Btg horizon:

Hue—10YR or 2.5Y (2.5YR to 10YR in iron masses)

Value—4 or 5

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay loam, silty clay, or clay

2Btg or 2BCg horizon:

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay loam, clay loam, silty clay, or silt loam

Moniteau Series*Depth class:* Very deep*Drainage class:* Poorly drained*Permeability:* Moderately slow*Landform:* Flood-plain steps in river valleys*Parent material:* Fine-silty alluvium*Slope range:* 0 to 3 percent**Taxonomic classification:** Fine-silty, mixed, superactive, mesic Typic Endoaqualfs

Typical Pedon

Moniteau silt loam, 0 to 3 percent slopes, occasionally flooded, 200 feet north and 300 feet west of the southeast corner of sec. 29, T. 49 N., R. 11 W.; USGS Millersburg topographic quadrangle; latitude 38 degrees 59 minutes 34 seconds N.; longitude 92 degrees 10 minutes 7 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; common fine faint dark grayish brown (10YR 4/2) iron depletions; weak fine granular and weak very fine subangular blocky structure; friable; many very fine roots; strongly acid; abrupt smooth boundary.

E—8 to 17 inches; light brownish gray (10YR 6/2) silt loam; weak thin platy structure parting to moderate very fine subangular blocky; firm; few fine iron and manganese concretions; few very fine roots; very strongly acid; clear smooth boundary.

Btg1—17 to 32 inches; dark grayish brown (10YR 4/2) silty clay loam; very dark grayish brown (10YR 3/2) faces of peds; few medium faint brown (10YR 4/3) iron masses; weak fine prismatic structure parting to moderate fine subangular blocky; firm; few faint and few distinct clay films; few silt coatings; few very fine roots; very strongly acid; gradual smooth boundary.

Btg2—32 to 51 inches; mixed dark grayish brown (10YR 4/2) and grayish brown (10YR 5/2) silt loam; few vertical very dark grayish brown (10YR 3/2) faces of peds; few fine faint brown (10YR 4/3) iron masses; weak fine prismatic structure parting to moderate fine subangular blocky; firm; common distinct and few faint clay films; common silt coatings; few very fine roots; very strongly acid; gradual smooth boundary.

Btg3—51 to 64 inches; mixed dark grayish brown (10YR 4/2), grayish brown (10YR 5/2), and brown (10YR 4/3) silt loam; weak fine prismatic structure parting to weak fine subangular blocky; firm; common faint and distinct clay films; few faint silt coatings; few very fine roots; very strongly acid.

Range in Characteristics

Ap horizon:

Hue—10YR

Value—4 or 5

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

E horizon:

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—2

Texture of the fine-earth fraction—silt loam

Btg horizon:

Hue—10YR

Value—4 or 5

Chroma—2

Texture of the fine-earth fraction—silt loam or silty clay loam

Perche Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Moderate

Landform: Flood plains in river valleys

Parent material: Coarse-loamy alluvium

Slope range: 0 to 2 percent

Taxonomic classification: Coarse-loamy, mixed, superactive, nonacid, mesic Aquic Udifluvents

Typical Pedon

Perche loam, 0 to 2 percent slopes, frequently flooded, 50 feet south and 50 feet east of the northwest corner of sec. 16, T. 49 N., R. 13 W.; USGS Sturgeon SW topographic quadrangle; latitude 39 degrees 2 minutes 32 seconds N.; longitude 92 degrees 23 minutes 43 seconds W.

Ap—0 to 4 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; moderate medium granular structure; very friable; few coarse and medium roots; slightly alkaline; clear smooth boundary.

C1—4 to 15 inches; brown (10YR 4/3), stratified fine sandy loam, loamy sand, and sand; very pale brown (10YR 7/4) strata; few medium faint grayish brown (10YR 5/2) iron depletions; weak medium subangular blocky structure in the sandy loam strata and single grain in the sandy strata; very friable in the sandy loam strata and loose in the sandy strata; few coarse roots; few charcoal fragments; slightly alkaline; clear smooth boundary.

C2—15 to 28 inches; brown (10YR 5/3) silt loam; common medium faint dark grayish brown (10YR 4/2) and grayish brown (10YR 5/2) iron depletions and few medium prominent strong brown (7.5YR 4/6) masses of iron accumulation; weak medium platy bedding planes; friable; few fine roots; slightly alkaline; gradual smooth boundary.

C3—28 to 53 inches; brown (10YR 5/3) and dark grayish brown (10YR 4/2) loam; thin strata of very pale brown (10YR 7/4) sand; common medium faint grayish brown (10YR 5/2) iron depletions and few medium prominent strong brown (7.5YR 4/6)

masses of iron accumulation; very friable; few very fine roots; slightly alkaline; gradual smooth boundary.

C4—53 to 60 inches; grayish brown (10YR 5/2) and brown (10YR 4/3) silt loam; weak medium subangular blocky structure; very friable; few very fine roots; neutral.

Range in Characteristics

Ap horizon:

Hue—10YR

Value—3 or 4

Chroma—2 or 3

Texture of the fine-earth fraction—loam

C horizon:

Hue—10YR

Value—3 to 5

Chroma—2 to 4

Texture of the fine-earth fraction—loam, silt loam, or fine sandy loam with thin strata of sand or loamy sand

Putnam Series

Depth class: Very deep

Drainage class: Poorly drained

Permeability: Very slow

Landform: Ridges on uplands

Position on the landform: Summits

Parent material: Clayey loess

Slope range: 0 to 1 percent

Taxonomic classification: Fine, smectitic, mesic
Vertic Albaqualfs

Typical Pedon

Putnam silt loam, 0 to 1 percent slopes, 2,700 feet west and 1,600 feet south of the northeast corner of sec. 5, T. 51 N., R. 11 W.; USGS Centralia topographic quadrangle; latitude 39 degrees 14 minutes 45 seconds N.; longitude 92 degrees 10 minutes 12 seconds W.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; common very fine roots; neutral; abrupt smooth boundary.

E—9 to 14 inches; grayish brown (10YR 5/2) silt loam; few fine distinct yellowish brown (10YR 5/4) iron masses; weak thin platy structure; friable; few very fine roots; very strongly acid; abrupt smooth boundary.

Btg1—14 to 23 inches; dark gray (10YR 4/1) silty clay; few fine prominent strong brown (7.5YR 5/6) iron

masses; moderate fine subangular blocky structure; firm; few very fine roots; few fine iron and manganese stains; many faint very dark gray (10YR 3/1) clay films on faces of peds; extremely acid; clear smooth boundary.

Btg2—23 to 30 inches; dark grayish brown (10YR 4/2) silty clay; common medium prominent strong brown (7.5YR 5/6) iron masses; moderate fine subangular blocky structure; firm; few very fine roots; few fine iron and manganese stains; many faint clay films on faces of peds; extremely acid; clear smooth boundary.

Btg3—30 to 43 inches; grayish brown (10YR 5/2) silty clay loam; few fine prominent strong brown (7.5YR 4/6) and common medium prominent yellowish brown (10YR 5/6) iron masses; weak coarse prismatic structure parting to weak fine subangular blocky; friable; few fine roots; few fine iron and manganese stains; few faint clay films on faces of peds; few faint light gray (10YR 7/1) silt coatings; extremely acid; gradual smooth boundary.

Btg4—43 to 60 inches; light brownish gray (10YR 6/2) silty clay loam; few fine prominent strong brown (7.5YR 4/6) and few medium prominent yellowish brown (10YR 5/6) iron masses; weak coarse prismatic structure parting to weak fine subangular blocky; friable; few fine iron and manganese stains; few faint clay films on faces of peds; common faint light gray (10YR 7/1) silt coatings; extremely acid; gradual smooth boundary.

Cg—60 to 72 inches; gray (10YR 5/1) silty clay loam; few fine distinct yellowish brown (10YR 5/4) and few fine prominent reddish brown (5YR 4/4) iron masses; massive; firm; few fine iron and manganese stains; strongly acid.

Range in Characteristics

Ap horizon:

Hue—10YR

Value—3

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

E horizon:

Hue—10YR

Value—5 or 6

Chroma—1 or 2

Texture of the fine-earth fraction—silt loam

Btg horizon:

Hue—10YR or 2.5Y (2.5YR to 10YR in iron masses)

Value—4 to 6

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay, clay, or silty clay loam

Cg horizon:

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay loam or silt loam

Rocheport Series

Depth class: Deep

Drainage class: Moderately well drained

Permeability: Moderately slow

Landform: Hills on uplands

Position on the landform: Backslopes

Parent material: Fine-silty loess and/or clayey residuum derived from limestone

Slope range: 14 to 40 percent

Taxonomic classification: Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs

Typical Pedon

Rocheport silt loam, in an area of Rocheport-Bonnefemme complex, 14 to 25 percent slopes, 2,300 feet west of the southeast corner of sec. 10, T. 45 N., R. 12 W.; USGS Hartsburg topographic quadrangle; latitude 38 degrees 41 minutes 14 seconds N.; longitude 92 degrees 15 minutes 48 seconds W.

Oi—0.5 inch to 0; 100 percent leaf litter cover.

A—0 to 1 inch; finely mixed black (10YR 2/1) and dark brown (10YR 3/3) silt loam; moderate very fine granular and moderate very fine subangular blocky structure; very friable; many very fine and fine roots and few medium roots; slightly acid; abrupt wavy boundary.

E—1 to 5 inches; brown (10YR 5/3) silt loam; common faint masses of yellowish brown (10YR 5/6) and few faint masses of dark brown (10YR 3/3); moderate thin platy structure parting to weak very fine subangular blocky; very friable; many very fine, fine, and medium roots and common coarse roots; moderately acid; clear smooth boundary.

Bt1—5 to 12 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine and very fine subangular blocky structure; friable; many faint yellowish brown (10YR 5/4) clay films on faces of peds; few very fine, common fine, and many medium and coarse roots; very strongly acid; diffuse smooth boundary.

Bt2—12 to 18 inches; yellowish brown (10YR 5/6) silty

clay loam; few fine distinct brown (10YR 5/3) iron masses increasing in number with increasing depth; moderate fine subangular blocky structure; firm; common distinct yellowish brown (10YR 5/4) and few distinct brown (10YR 5/3) clay films on faces of peds; many fine iron and manganese stains; few very fine, common fine, and few medium and coarse roots; few fine iron and manganese concretions; very strongly acid; gradual smooth boundary.

Bt3—18 to 30 inches; yellowish brown (10YR 5/6) silty clay loam; many fine light brownish gray (10YR 6/2) and pale brown (10YR 6/3) iron depletions in the matrix and along root channels and pore channels; few coarse gray (10YR 5/1) iron depletions along pores containing dead roots; weak fine subangular blocky structure; firm; many faint clay films on faces of peds; many fine iron and manganese stains; few very fine, fine, and medium roots; common fine iron and manganese concretions; strongly acid; gradual wavy boundary.

2Bt4—30 to 39 inches; pale brown (10YR 6/3) silty clay; many fine prominent yellowish brown (10YR 5/6) iron masses and common fine faint light brownish gray (10YR 6/2) iron depletions; moderate fine prismatic structure parting to moderate fine and very fine subangular blocky; firm; many faint and distinct clay films on faces of peds; many faint pressure faces, some angled; common fine iron and manganese stains; few very fine and fine roots; common fine and medium iron and manganese concretions; neutral; clear wavy boundary.

2Bt5—39 to 48 inches; finely to coarsely mixed yellowish brown (10YR 5/8) and brownish yellow (10YR 6/8) clay; many coarse prominent light brownish gray (10YR 6/2) and pale brown (10YR 6/3) iron depletions; weak fine prismatic structure parting to moderate fine subangular blocky; firm; common faint clay films on faces of peds; few distinct and prominent yellowish brown (10YR 5/6) clay films on faces of peds; few fine iron and manganese stains; few very fine and fine roots; few chert pebbles; neutral; abrupt smooth boundary.

2Cr—48 to 52 inches; light gray (2.5Y 7/2) saprolite that crushes to silt loam with residual gravel; many coarse prominent brownish yellow (10YR 6/6) iron masses; very firm; iron and manganese stains on joints; few very fine roots in some fractures; effervescent; moderately alkaline; abrupt smooth boundary.

2R—52 inches; dolostone.

Range in Characteristics

Depth to bedrock: 40 to 60 inches

A horizon:

Hue—10YR
Value—2 to 4
Chroma—1 to 3
Texture of the fine-earth fraction—silt loam

E horizon:

Hue—10YR
Value—5 or 6
Chroma—3 or 4
Texture of the fine-earth fraction—silt loam

Bt horizon:

Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture of the fine-earth fraction—silt loam or silty clay loam

2Bt horizon:

Hue—5YR to 10YR
Value—4 to 6
Chroma—3 to 8
Texture of the fine-earth fraction—silty clay loam, silty clay, or clay
Content of coarse fragments—0 to 10 percent

Sandover Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Rapid in the upper part and moderate in the lower part

Landform: Flood plains in river valleys

Parent material: Sandy alluvium over loamy alluvium

Slope range: 0 to 2 percent

Taxonomic classification: Sandy over loamy, mixed, superactive, nonacid, mesic Aquic Udifluvents

Typical Pedon

Sandover sand, 0 to 2 percent slopes, occasionally flooded, 3,400 feet south and 1,750 feet west of the northeast corner of sec. 16, T. 46 N., R. 13 W.; USGS Jamestown topographic quadrangle; latitude 38 degrees 46 minutes 3 seconds N.; longitude 92 degrees 23 minutes 31 seconds W.

A—0 to 6 inches; brown (10YR 4/3) sand, pale brown (10YR 6/3) dry; single grain; loose; many very fine and fine interstitial pores; neutral; abrupt smooth boundary.

C1—6 to 22 inches; dark grayish brown (10YR 4/2) fine sandy loam; massive; very friable; common very fine interstitial pores; neutral; abrupt smooth boundary.

C2—22 to 31 inches; brown (10YR 5/3) sand; single grain; loose; many very fine and fine interstitial pores; 3 percent gravel; slightly alkaline; abrupt smooth boundary.

2C3—31 to 48 inches; dark brown (10YR 3/3) loam; massive; friable; common very fine interstitial pores; few distinct patchy brown (7.5YR 4/4) manganese or iron-manganese stains throughout; few fine rounded masses of iron-manganese accumulation throughout; 1 percent gravel; slightly alkaline; gradual smooth boundary.

2C4—48 to 63 inches; olive brown (2.5Y 4/3) very fine sandy loam; massive; very friable; common very fine interstitial pores; very few distinct patchy yellowish brown (10YR 5/6) manganese or iron-manganese stains throughout; slightly alkaline.

Range in Characteristics

Ap horizon:

Hue—10YR
Value—3 to 5
Chroma—2 or 3
Texture of the fine-earth fraction—sand

C horizon:

Hue—10YR or 2.5Y
Value—4 or 5
Chroma—3
Texture of the fine-earth fraction—strata of sand and fine sandy loam
Content of coarse fragments—0 to 3 percent

2C horizon:

Hue—10YR or 2.5Y
Value—3 to 6
Chroma—2 or 3
Texture of the fine-earth fraction—strata of loam and very fine sandy loam
Content of coarse fragments—0 to 1 percent

Sarpy Series

Depth class: Very deep

Drainage class: Excessively drained

Permeability: Rapid

Landform: Flood plains in river valleys

Parent material: Sandy alluvium

Slope range: 0 to 2 percent

Taxonomic classification: Mixed, mesic Typic Udipsamments

Typical Pedon

Sarpy fine sand, 0 to 2 percent slopes, occasionally flooded, 3,700 feet east and 4,300 feet north of the southwest corner of sec. 4, T. 45 N., R. 13 W.; USGS Hartsburg topographic quadrangle; latitude 38 degrees 41 minutes 4 seconds N.; longitude 92 degrees 21 minutes 5 seconds W.

A—0 to 3 inches; brown (10YR 5/3) fine sand; single grain; loose; slightly alkaline; clear smooth boundary.

C1—3 to 54 inches; brown (10YR 4/3) fine sand; single grain; loose; slightly alkaline; clear smooth boundary.

C2—54 to 62 inches; dark grayish brown (10YR 4/2) fine sand; single grain; loose; slightly alkaline.

Range in Characteristics

A horizon:

Hue—10YR

Value—3 to 5

Chroma—2 or 3

Texture of the fine-earth fraction—fine sand

C horizon:

Hue—10YR

Value—4 to 6

Chroma—2 or 3

Texture of the fine-earth fraction—fine sand, loamy fine sand, or sand

Tanglenook Series

Depth class: Very deep

Drainage class: Poorly drained

Permeability: Slow

Landform: Stream terraces in river valleys

Parent material: Alluvium

Slope range: 1 to 3 percent

Taxonomic classification: Fine, mixed, superactive, mesic Typic Argiaquolls

Typical Pedon

Tanglenook silt loam, 1 to 3 percent slopes, rarely flooded, 600 feet north and 800 feet east of the southwest corner of sec. 12, T. 50 N., R. 13 W.; USGS Sturgeon topographic quadrangle; latitude 39 degrees 7 minutes 49 seconds N.; longitude 92 degrees 20 minutes 4 seconds W.

A1—0 to 3 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; friable; common

fine and many very fine roots; moderately acid; abrupt smooth boundary.

A2—3 to 14 inches; very dark grayish brown (10YR 3/2) silt loam; very dark gray (10YR 3/1) faces of peds; dark grayish brown (10YR 4/2) dry; moderate fine subangular blocky structure; friable; few fine and common very fine roots; slightly acid; clear smooth boundary.

Btg1—14 to 24 inches; very dark gray (10YR 3/1) silty clay, dark gray (10YR 4/1) dry; common fine prominent brown (7.5YR 4/4) iron masses; moderate fine subangular blocky structure; firm; common faint clay films; few very fine roots; strongly acid; gradual smooth boundary.

Btg2—24 to 31 inches; dark grayish brown (10YR 4/2) silty clay loam; very dark gray (10YR 3/1) faces of peds; common medium prominent brown (7.5YR 4/4) iron masses; strong fine subangular blocky structure; firm; common faint clay films; strongly acid; gradual smooth boundary.

Btg3—31 to 43 inches; dark grayish brown (10YR 4/2) silty clay loam; dark gray (10YR 4/1) faces of peds; many fine distinct brown (7.5YR 4/2) iron masses; moderate fine prismatic structure parting to strong fine subangular blocky; common faint clay films on faces of peds; strongly acid; gradual smooth boundary.

Btg4—43 to 52 inches; dark grayish brown (10YR 4/2) silty clay loam; common fine faint dark gray (10YR 4/1) iron depletions and common fine distinct brown (7.5YR 4/2) iron masses; moderate fine prismatic structure parting to strong fine and very fine subangular blocky; firm; few prominent very dark gray (10YR 3/1) clay films on faces of peds; few fine iron and manganese concretions; moderately acid; clear smooth boundary.

Btg5—52 to 60 inches; gray (10YR 5/1) silty clay loam; many coarse prominent yellowish brown (10YR 5/6) iron masses; moderate medium prismatic structure parting to moderate fine subangular blocky; firm; common prominent very dark gray (10YR 3/1) clay films in pores and few prominent and common distinct clay films on faces of peds; few fine iron and manganese concretions; moderately acid.

Range in Characteristics

A horizon:

Hue—10YR

Value—3

Chroma—1 or 2

Texture of the fine-earth fraction—silt loam

Btg horizon:

Hue—10YR or 2.5Y

Value—3 to 5

Chroma—1 or 2

Texture of the fine-earth fraction—silty clay or silty clay loam

Vanmeter Series

Depth class: Moderately deep

Drainage class: Moderately well drained

Permeability: Very slow

Landform: Hills on uplands

Position on the landform: Backslopes

Parent material: Residuum derived from clayey shale

Slope range: 5 to 40 percent

Taxonomic classification: Fine, illitic, mesic
Oxyaquic Eutrudepts

Typical Pedon

Vanmeter silty clay, 14 to 40 percent slopes, 300 feet east and 2,300 feet north of the southwest corner of sec. 24, T. 50 N., R. 13 W.; USGS Sturgeon topographic quadrangle; latitude 39 degrees 7 minutes 40 seconds N.; longitude 92 degrees 27 minutes 13 seconds W.

A—0 to 3 inches; very dark grayish brown (10YR 3/2) silty clay, dark grayish brown (10YR 4/2) dry; common fragments of red (2.5YR 4/6) and brown (7.5YR 4/4) silty clay mixed in; weak fine subangular blocky structure; firm; common fine iron and manganese stains; common fine and few medium roots; neutral; clear smooth boundary.

Bw1—3 to 9 inches; yellowish red (5YR 4/6) and brown (7.5YR 4/4) clay; common fine distinct grayish brown (2.5Y 5/2) mottles; moderate medium subangular blocky structure; firm; common fine black (2.5Y 5/1) lignite fragments; common fine roots; few fine dark red (10R 3/6) shale pebbles; slightly effervescent; slightly alkaline; abrupt smooth boundary.

Bw2—9 to 20 inches; olive brown (2.5Y 4/3) clay; common coarse prominent strong brown (7.5YR 4/6) iron masses; weak medium subangular blocky structure parting to weak fine subangular blocky; very firm; few fine organic stains on faces of peds; common fine soft masses of calcium carbonate; few fine roots; strongly effervescent; slightly alkaline; clear smooth boundary.

Bw3—20 to 32 inches; brownish yellow (10YR 6/6) silty clay loam (soft shale); common fine prominent pale olive (5Y 6/3) and common medium prominent reddish yellow (7.5YR 6/8) strata; weak medium platy structure; friable; few fine iron and manganese stains; common fine soft

masses of calcium carbonate; few very fine roots; slightly effervescent; slightly alkaline; gradual smooth boundary.

Cr—32 to 60 inches; light olive gray (5Y 6/2) silty clay loam (soft shale); common medium prominent reddish yellow (7.5YR 6/6) and few medium prominent dark brown (7.5YR 3/4) strata; weak medium platy structure; friable; common fine soft masses of calcium carbonate; few very fine roots; slightly effervescent; slightly alkaline.

Range in Characteristics

Depth to the Cr horizon: 20 to 40 inches

A horizon:

Hue—10YR

Value—3 or 4

Chroma—2 or 3

Texture of the fine-earth fraction—silty clay or clay loam

Bw horizon:

Hue—5YR to 2.5Y

Value—4 to 6

Chroma—3 to 6

Texture of the fine-earth fraction—silty clay, clay, clay loam, or silty clay loam

Weller Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Slow

Landform: Ridges on uplands

Position on the landform: Summits, shoulders, and benches

Parent material: Loess

Slope range: 2 to 9 percent

Taxonomic classification: Fine, smectitic, mesic
Aquertic Chromic Hapludalfs

Typical Pedon

Weller silt loam, 2 to 5 percent slopes, eroded, 2,050 feet west and 2,500 feet north of the southeast corner of sec. 34, T. 46 N., R. 12 W.; USGS Hartsburg topographic quadrangle; latitude 38 degrees 43 minutes 23 seconds N.; longitude 92 degrees 15 minutes 42 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; moderate medium granular structure; very friable; many fine roots; neutral; clear smooth boundary.

BE—8 to 13 inches; yellowish brown (10YR 5/4) silt loam; few fine prominent red (2.5YR 4/8) iron masses; weak fine subangular blocky structure;

friable; common distinct silt coatings on faces of peds; many fine roots; neutral; clear smooth boundary.

Bt1—13 to 20 inches; yellowish brown (10YR 5/4) silty clay; many fine prominent red (2.5YR 4/8) iron masses and few fine distinct light brownish gray (10YR 6/2) iron depletions; moderate medium prismatic structure parting to moderate fine subangular blocky; firm; common faint clay films and few prominent silt coatings on faces of peds; many fine roots; moderately acid; clear smooth boundary.

Bt2—20 to 25 inches; brown (10YR 5/3) silty clay; common medium faint light brownish gray (10YR 6/2) iron depletions and common medium prominent strong brown (7.5YR 4/6) iron masses; moderate medium angular blocky structure; firm; common faint clay films and few prominent silt coatings on faces of peds; many fine roots; very strongly acid; gradual smooth boundary.

Btg1—25 to 35 inches; grayish brown (10YR 5/2) silty clay loam; common medium prominent brown (7.5YR 4/4) iron masses and common medium faint light brownish gray (10YR 6/2) iron depletions; strong medium angular blocky structure; firm; common faint silt coatings on faces of peds; common fine and medium iron and manganese stains; many very fine roots; strongly acid; diffuse smooth boundary.

Btg2—35 to 45 inches; grayish brown (10YR 5/2) silty clay loam; common medium prominent brown (7.5YR 4/4) iron masses and common medium faint light brownish gray (10YR 6/2) iron depletions; moderate medium angular blocky structure; firm; common faint silt coatings on faces of peds; common organic films in pores; common very fine roots; slightly acid; gradual smooth boundary.

Btg3—45 to 60 inches; grayish brown (2.5Y 5/2) silty clay loam; common medium prominent brown (7.5YR 4/4) iron masses; moderate medium subangular blocky structure parting to moderate fine subangular blocky; friable; common faint silt coatings on faces of peds; common fine and medium iron and manganese stains; common organic films in pores; slightly acid; common very fine roots.

Range in Characteristics

Ap horizon:

Hue—10YR

Value—4 or 5

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

E or BE horizon:

Hue—10YR

Value—4 or 5

Chroma—2 to 4

Texture of the fine-earth fraction—silt loam

Bt horizon:

Hue—10YR

Value—4 or 5

Chroma—3 or 4

Texture of the fine-earth fraction—silty clay or silty clay loam

Btg horizon:

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—2

Texture of the fine-earth fraction—silty clay loam or silt loam

2Btg horizon (if it occurs):

Hue—10YR

Value—4 to 6

Chroma—2 to 6

Texture of the fine-earth fraction—silt loam

Wilbur Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Moderate

Landform: Flood plains in river valleys

Parent material: Coarse-silty alluvium

Slope range: 0 to 2 percent

Taxonomic classification: Coarse-silty, mixed, superactive, mesic Fluvaqueptic Eutrudepts

Typical Pedon

Wilbur silt loam, 0 to 2 percent slopes, frequently flooded, 2,000 feet west and 700 feet north of the southeast corner of sec. 22, T. 47 N., R. 13 W.; USGS Ashland topographic quadrangle; latitude 38 degrees 50 minutes 10 seconds N.; longitude 92 degrees 22 minutes 18 seconds W.

A1—0 to 3 inches; very dark grayish brown (10YR 3/2) silt loam; few fine masses of dark brown (10YR 3/3); grayish brown (10YR 5/2) dry; moderate fine granular and very fine subangular blocky structure; very friable; many very fine roots; neutral; clear smooth boundary.

A2—3 to 8 inches; mixed brown (10YR 4/3) and yellowish brown (10YR 5/4) silt loam; very dark grayish brown (10YR 3/2) and dark brown (10YR 3/3) faces of peds; few fine faint grayish brown

(10YR 5/2) and distinct brown (7.5YR 4/4) iron masses; brown (10YR 4/3) when rubbed, pale brown (10YR 6/3) dry; weak fine subangular blocky structure; very friable; common very fine roots; neutral; clear smooth boundary.

Bw1—8 to 15 inches; brown (10YR 5/3) silt loam; few fine faint light brownish gray (10YR 6/2) iron depletions and few fine prominent strong brown (7.5YR 5/6) iron masses; weak fine subangular blocky structure; very friable; common very fine roots; neutral; gradual smooth boundary.

Bw2—15 to 23 inches; brown (10YR 5/3) silt loam; common fine faint light brownish gray (10YR 6/2) iron depletions and few fine prominent strong brown (7.5YR 5/6) iron masses; weak fine subangular blocky structure; very friable; few very fine roots; neutral; clear smooth boundary.

Bw3—23 to 36 inches; pale brown (10YR 6/3) silt loam; common fine and medium prominent strong brown (7.5YR 5/6) iron masses and many fine and medium faint light brownish gray (10YR 6/2) iron depletions; weak fine subangular blocky structure; very friable; common fine iron-manganese stains; few very fine roots; neutral; clear smooth boundary.

Cg1—36 to 52 inches; light brownish gray (10YR 6/2) silt loam; common fine and medium prominent strong brown (7.5YR 5/6) and coarse faint pale brown (10YR 6/3) iron masses; massive; very friable; common fine iron-manganese stains; few very fine roots; neutral; clear smooth boundary.

Cg2—52 to 66 inches; light brownish gray (10YR 6/2) silt loam; stratified common coarse faint pale brown (10YR 6/3) iron masses and common fine and medium prominent strong brown (7.5YR 5/6) iron masses associated with pores; massive; very friable; common fine iron-manganese stains; few very fine roots; few thin strata of very fine sandy loam; one thin stratum containing pebbles; neutral.

Range in Characteristics

A or Ap horizon:

Hue—10YR

Value—3 to 5

Chroma—2 to 4

Texture of the fine-earth fraction—silt loam

Bw horizon:

Hue—10YR

Value—4 to 6

Chroma—3

Texture of the fine-earth fraction—silt loam

Cg or C horizon:

Hue—10YR

Value—4 to 6

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

Winfield Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Moderate

Landform: Hills on uplands

Position on the landform: Shoulders and backslopes

Parent material: Fine-silty loess

Slope range: 5 to 45 percent

Taxonomic classification: Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs

Typical Pedon

Winfield silt loam, 5 to 9 percent slopes, 990 feet east and 330 feet south of the northwest corner of sec. 33, T. 48 N., R. 13 W.; USGS Huntsdale topographic quadrangle; latitude 38 degrees 54 minutes 30 seconds N.; longitude 92 degrees 23 minutes 50 seconds W.

Ap—0 to 6 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; common fine roots; few dark brown (10YR 3/3) organic coatings; neutral; clear smooth boundary.

E—6 to 10 inches; brown (10YR 4/3) silt loam; weak medium subangular blocky structure; friable; common fine roots; slightly acid; clear smooth boundary.

BE—10 to 14 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; firm; many fine roots; slightly acid; clear smooth boundary.

Bt1—14 to 22 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine subangular blocky structure; firm; common fine roots; few faint brown (10YR 4/3) clay films on faces of peds; strongly acid; gradual smooth boundary.

Bt2—22 to 30 inches; yellowish brown (10YR 5/6) silty clay loam; strong medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds and few gray (10YR 6/1) silt coatings on faces of peds; common fine very dark brown (10YR 2/2) iron-manganese concretions; very strongly acid; gradual smooth boundary.

Btg1—30 to 43 inches; light brownish gray (10YR 6/2), yellowish brown (10YR 5/6), and brown (7.5YR 4/4) silty clay loam; moderate medium prismatic structure parting to weak medium subangular blocky; firm; few fine roots; very thick light

brownish gray clay coatings on flows on some vertical prism faces; few faint clay films on faces of peds; many very dark brown (10YR 2/2) iron-manganese concretions; very strongly acid; gradual smooth boundary.

Btg2—43 to 54 inches; gray (10YR 6/1) silty clay loam; moderate medium prismatic structure parting to weak medium subangular blocky; friable; few fine roots; distinct clay films on vertical and horizontal faces of peds; many fine dark yellowish brown (10YR 4/4) soft masses of iron between peds and many dark brown (10YR 3/3) iron-manganese concretions; very strongly acid; gradual broken boundary.

Cg—54 to 72 inches; gray (10YR 6/1) silt loam; massive; few fine roots; common dark brown (10YR 3/3) iron-manganese concretions and many fine brown (7.5YR 4/4) soft masses of iron; moderately acid.

Range in Characteristics

Ap or A horizon:

Hue—10YR

Value—3 to 5

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam

E horizon:

Hue—10YR

Value—4 to 6

Chroma—2 to 4

Texture of the fine-earth fraction—silt loam

BE horizon:

Hue—10YR or 7.5YR

Value—4 or 5

Chroma—3 or 4

Texture of the fine-earth fraction—silt loam

Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5

Chroma—3 to 6

Texture of the fine-earth fraction—silt loam or silty clay loam

Btg horizon:

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—1 or 2

Texture of the fine-earth fraction—silt loam or silty clay loam

Cg or C horizon:

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 to 4

Texture of the fine-earth fraction—silt loam

Winnegan Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Slow

Landform: Hills on uplands

Position on the landform: Backslopes

Parent material: Clayey till

Slope range: 14 to 35 percent

Taxonomic classification: Fine, mixed, superactive, mesic Oxyaquic Hapludalfs

Typical Pedon

Winnegan loam, 20 to 35 percent slopes, 1,800 feet north and 1,100 feet west of the southeast corner of sec. 18, T. 49 N., R. 12 W.; USGS Browns topographic quadrangle; latitude 39 degrees 1 minute 39 seconds N.; longitude 92 degrees 18 minutes 49 seconds W.

A—0 to 2 inches; dark grayish brown (10YR 4/2)

loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky and granular structure;

very friable; many very fine roots; moderately acid; abrupt smooth boundary.

E—2 to 7 inches; variegated grayish brown (10YR

5/2), brown (10YR 5/3), and yellowish brown

(10YR 5/4) loam; weak thin platy structure parting

to weak very fine subangular blocky; friable;

common silt coatings; common fine and few very

fine roots; strongly acid; clear smooth boundary.

Bt1—7 to 12 inches; yellowish brown (10YR 5/4) clay

loam; weak fine subangular blocky structure; firm;

common silt coatings; few brown (7.5YR 5/4) clay

films on faces of peds; few white pebbles and

sand grains; few very fine roots; very strongly

acid; clear smooth boundary.

Bt2—12 to 22 inches; strong brown (7.5YR 4/6) clay;

moderate fine subangular blocky structure; very

firm; few brown (7.5YR 5/4) clay films on faces of

peds; common white pebbles and sand grains;

few very fine roots; very strongly acid; clear

smooth boundary.

Bt3—22 to 37 inches; dark yellowish brown (10YR

4/6) clay loam; common fine prominent light

brownish gray (10YR 6/2) iron depletions;

moderate medium subangular blocky structure;

very firm; common distinct brown (7.5YR 4/4) clay

films on faces of peds; few iron and manganese

stains; common white pebbles and sand grains;

few very fine roots; strongly acid; clear smooth boundary.

Btk1—37 to 45 inches; light brownish gray (10YR 6/2) clay loam; few medium prominent strong brown (7.5YR 4/6) iron masses; moderate medium subangular blocky structure; very firm; common prominent dark yellowish brown (10YR 4/4) clay films on faces of peds; few white pebbles and sand grains; strongly effervescent; slightly alkaline; clear smooth boundary.

Btk2—45 to 60 inches; yellowish brown (10YR 5/6) clay loam; many coarse distinct brown (10YR 5/3) iron masses; moderate medium subangular blocky structure; very firm; many silt coatings; common clay films on vertical faces of peds; many soft masses of calcium carbonates; few white pebbles and sand grains; strongly effervescent; slightly alkaline.

Range in Characteristics

A or Ap horizon:

Hue—10YR

Value—2 to 5

Chroma—2 or 3

Texture of the fine-earth fraction—loam

E horizon:

Hue—10YR

Value—4 or 5

Chroma—2 to 4

Texture of the fine-earth fraction—loam

Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5

Chroma—4 to 6

Texture of the fine-earth fraction—clay or clay loam

Content of coarse fragments—1 to 5 percent

Btk horizon:

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 to 6

Texture of the fine-earth fraction—clay loam or loam

Content of coarse fragments—1 to 5 percent

Wrengart Series

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Moderately slow

Landform: Hills on uplands

Position on the landform: Shoulders and backslopes

Parent material: Fine-silty loess over gravelly residuum derived from cherty limestone

Slope range: 5 to 14 percent

Taxonomic classification: Fine-silty, mixed, active, mesic Fragic Oxyaquic Hapludalfs

Typical Pedon

Wrengart silt loam, 5 to 9 percent slopes, eroded, 1,350 feet north and 1,100 feet west of the southeast corner of sec. 1, T. 50 N., R. 13 W.; USGS Browns topographic quadrangle; latitude 39 degrees 9 minutes 19 seconds N.; longitude 92 degrees 19 minutes 19 seconds W.

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; friable; many fine and very fine roots; slightly acid; clear smooth boundary.

BE—5 to 11 inches; brown (10YR 4/3) silt loam; weak fine subangular blocky structure; friable; common fine and very fine roots; slightly acid; clear smooth boundary.

Bt1—11 to 23 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak coarse prismatic structure parting to moderate fine subangular blocky; firm; common distinct clay films on faces of peds; few fine and common very fine roots; moderately acid; clear smooth boundary.

Bt2—23 to 34 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine prismatic structure parting to moderate fine subangular blocky; friable; common faint clay films on faces of peds; few fine iron and manganese stains; common fine and very fine roots; strongly acid; clear smooth boundary.

Btx—34 to 57 inches; brown (7.5YR 4/4) silty clay loam; few fine prominent grayish brown (10YR 5/2) iron depletions; moderate coarse prismatic structure parting to weak medium subangular blocky; firm (about 40 percent of the matrix is brittle); few faint clay films on faces of peds; common distinct clay depletions; common distinct iron and manganese stains; common vertical gray (10YR 6/2) streaks along prism faces; few fine roots between peds; strongly acid; clear smooth boundary.

2Bt—57 to 72 inches; brown (7.5YR 4/4) extremely gravelly silt loam; common medium prominent grayish brown (10YR 5/2) iron depletions; massive; firm; few faint clay films on faces of

pedes; 10 percent cobbles and 55 percent gravel;
strongly acid.

Range in Characteristics

Depth to the Btx horizon: 20 to 40 inches

Depth to the 2Bt, 2Btx, or 3Bt horizon: 40 to 60
inches

Ap or A horizon:

Hue—10YR

Value—3 to 5

Chroma—2 or 3

Texture of the fine-earth fraction—silt loam or silty
clay loam

E or BE horizon:

Hue—10YR

Value—4 to 6

Chroma—3 or 4

Texture of the fine-earth fraction—silt loam

Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5

Chroma—3 or 4

Texture of the fine-earth fraction—silty clay loam
or silty clay

Btx horizon:

Hue—10YR or 7.5YR

Value—4 to 6

Chroma—2 to 6

Texture of the fine-earth fraction—silt loam or silty
clay loam

2Btx horizon (if it occurs):

Hue—10YR or 7.5YR

Value—3 to 6

Chroma—2 to 6

Texture of the fine-earth fraction—silt loam or silty
clay loam

Content of coarse fragments—15 to 65 percent

2Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5

Chroma—4 to 6

Texture of the fine-earth fraction—silty clay loam
or silt loam

Content of coarse fragments—35 to 65 percent

3Bt horizon (if it occurs):

Hue—2.5YR to 7.5YR

Value—3 to 5

Chroma—4 to 6

Texture of the fine-earth fraction—clay or silty clay
loam

Content of coarse fragments—5 to 35 percent

Formation of the Soils

Soil is constantly subject to changes brought on by many complex environmental interactions. The characteristics of any particular soil are determined principally by five major factors—the nature of the parent material; biological activity; climate; relief, or lay of the land; and time (Brady, 1974). The factors of soil formation are all so closely interrelated in their effects on the soil that few generalizations can be made about the effect of any one factor unless conditions are specified for the other four.

Parent material is the raw material that is acted upon by weathering and biological processes. Parent material largely determines the composition of the soil profile, particularly in terms of texture and natural fertility. Biological activity refers to the actions of plants and animals, ranging from micro-organisms to human beings. It influences the content of organic matter, which in turn affects the structure and porosity of the soil. Climate influences the amount and types of biological activity and determines moisture and temperature, which affect the rate of soil development. Relief modifies the effects of the other soil-forming process. Time influences the degree of development of a soil profile. Horizon differentiation is generally a very slow process, and the appearance of the soil profile is affected by how long the parent material has been in place.

Parent Material

There are four principal types of parent material in Boone County. These are residuum, or material derived from bedrock; glacial till, or material deposited by glaciers; loess, or material deposited by wind; and alluvium, or material deposited by water (Krusekopf and Scrivner, 1962).

The source of residuum is a succession of stratigraphic bedrock materials that represent geologic systems ranging intermittently in age from the Lower Ordovician to the Middle Pennsylvanian (Unklesbay, 1952). The oldest exposed strata are in the southern part of the county, where overlying materials were removed by the cutting action of streams flowing toward the Missouri River.

The most ancient formation with surface exposure

in the county is the Jefferson City dolomite (Unklesbay, 1952). Immediately overlying this formation is the Cotter dolomite, which is characterized by a soft, grainy texture, referred to as “cotton rock” (Thompson, 1991). Bonnefemme soils are the product of weathering of this formation.

The most prevalent upper stratum in the county is the Burlington limestone. This highly fossiliferous and cherty formation is of Mississippian age. It has a thickness of around 170 feet (Unklesbay, 1952; Davis, 1991). This formation has a diverse influence on topography and surficial materials. It caps the bluffs above Cedar Creek and the Missouri River bottom land, and it constitutes the remnant formations of the Pinnacles north of Columbia, where the Silver Fork and the Kelley Branch meet. On steep slopes, weathered Burlington limestone is the parent material of the Bardley, Clinkenbeard, and Gasconade soils. In more level areas west and south of Columbia, sinkholes and caves have developed as a result of the solubility of the Burlington limestone in acidic ground water. Winfield and Wrengart soils are in these areas.

In the central part of Boone County, the Burlington limestone is overlain by a complex of strata of Pennsylvanian age that range to about 100 feet in thickness (Davis, 1991). Shale of variable structure and color is prevalent in this zone, but there are also seams of coal, siltstone, limestone, and sandstone. Much of the coal seams that were of marketable thickness have been surface mined. Lenzburg gravelly silty clay loam is derived from this mining activity. Vanmeter soils formed in residuum in undisturbed areas where Pennsylvanian strata are near the surface.

Glacial till in Boone County is a heterogeneous mixture of clay, sand, and gravel. These materials are derived from minerals that were transported by Pre-Illinoian glaciers, which receded about half a million years ago. Within the till are fragments of basalt, granite, diorite, quartzite, and mica schist, all of which originated in Minnesota and Canada. Other fragments, including sandstone, limestone, and coal, are remnants of more local transport (Unklesbay, 1952).

The present location of the Missouri River coincides approximately with the southern limit of glaciation. As

glaciers receded, the survey area was almost entirely covered by till. Subsequently, much of the till was removed by stream erosion and pre-glacial surfaces were exposed. In the northern part of the county, however, well borings have revealed glacial till as much as 140 feet in thickness (Unklesbay, 1952; Krusekopf and Scrivner, 1962). Keswick and Winnegan soils formed mainly in glacial till. Also, the lower part of the profile of Adco, Hatton, and Mexico soils formed in glacial till.

The later Illinoian and Wisconsin glaciations did not cover Boone County, but they had a distinct impact on the area. As the glaciers of these periods receded, the Missouri River rose with the meltwater and deposited large quantities of sediment on the flood plains. In cool, dry seasons when the river was down, this sediment was exposed. It was transported by winds and subsequently deposited on the adjacent uplands. This material, called loess, accumulated over extended periods to thicknesses ranging up to 20 feet (Buol and others, 1980; Howe and Koenig, 1961). Soils that formed in this parent material in areas relatively near the flood plain along the Missouri River are very silty, and some also have small quantities of fine sand. Menfro and Winfield soils are examples. Both of these soils have profiles that developed entirely in loess. Wrengart soils formed in silty loess that overlies bedrock residuum.

The texture of the loess generally becomes finer with increasing distance from the river (Hallberg, 1986; Howe and Koenig, 1961). Marion, Putnam, and Weller soils formed in deep, fine textured loess. Mexico and Hatton soils occur in the uplands. They have fine textured loess layers ranging from 20 to 35 inches in thickness over glacial till.

In areas near streams, alluvium is typically a mixture of stones and finer particles. Dameron and Cedargap soils contain chert as well as sand, silt, and clay that have accumulated through a combination of erosion from adjacent uplands and transport by water. The stratification of parent materials in Haymond and Perche soils indicates that sedimentation from periodic flooding currently outpaces other soil-forming processes. In areas of other bottom-land soils, such as Leta and Tanglenook soils, the parent material has had more opportunity to undergo weathering and structural development.

Alluvium is also a common parent material on terraces adjacent to bottom land. These terraces are remnants of previous flood plains that were carved by the meandering of streams and rivers as they developed newer flood plains at the lower elevations. Moniteau and Auxvasse soils are examples of soils on terraces.

The natural levees next to the Missouri River are made up mainly of Sarpy and Haynie soils, both of which are of very coarse textured. During times of high water, sand and silt precipitate quickly and accumulate near the river. Clay remains in suspension longer than these other particles and precipitates more slowly. This process is common in sloughs and other depressions; clayey soils, such as Leta and Darwin soils, formed in these areas.

Biological Activity

Soil structure is altered by the growth of the roots of higher plants, which break up aggregates within the soil profile. Microflora (bacteria, fungi, and actinomycetes) are the primary agents of decomposition of plant roots and surface residue, such as fallen leaves, dead plants and animals, and animal wastes. This decomposition involves the breakdown and conversion of raw organic material to complex organic compounds and the production of humus (Brady, 1974).

Humus is resistant to further microbial change. It has a significant influence on many soil properties. Humus-rich soils are dark brown or black, have a strong granular structure, and are naturally fertile. Humus retains plant nutrients, such as nitrogen, phosphorus, and sulfur, and has a high available water capacity (Brady, 1974).

Other organisms involved in soil formation include microfauna, such as nematodes and protozoa, and macrofauna, such as centipedes, earthworms, insects, and, to a lesser degree, rodents. Microfauna feed on microflora and parasitically on higher plants. Thus they affect the degree and complexity of vegetative decomposition. Macrofauna contribute to organic matter conversions in many ways. They physically break up plant residues into smaller components, thereby accelerating the production of humus (Brady, 1974).

Earthworms are particularly important in this process. In addition to the soil mixing that results from their movements, the tunnels they produce enhance soil aeration and percolation (Brady, 1974; Buol and others, 1980).

The development of a soil profile can be considerably influenced by the type of vegetation that grows on the soil. An important contrast that is relevant in Boone County is one between soils that formed under forest cover and soils that formed under grasses.

In areas of soils that formed under forest vegetation, most of the organic matter is concentrated at the surface, where a litter of fallen leaves and other

debris is continually decomposing and being replenished. This thin outer layer produces strong natural acids that, when percolated downward in the soil, break down minerals and organic material. This process accelerates leaching in the subsurface layer, thus reducing the level of fertility in that zone. The clays tend to accumulate in a lower layer, called an argillic horizon (Brady, 1974; Buol and others, 1980). Hatton and Keswick soils formed in this environment.

In areas of grassland, a high concentration of fibrous roots develops within a few feet of the surface. These roots tend to grow rapidly and then die, providing a large resource for humus production in that zone. Without the acid leachate of a forest litter, minerals and organic matter tend to remain within the root zone. Consequently, the topsoil is very dark, natural fertility and the water-holding capacity are high, and the leaching of clays is slowed by highly mobile biological activity (Buol and others, 1980). The upper part of a soil profile having these characteristics is called a mollic epipedon. Arisburg and Tanglenook soils are examples of soils that have a mollic epipedon.

Most of the soils in Boone County formed under forest cover. During some periods, however, even before human settlement in the area, some of these same soils were also covered by prairie grasses. This fact is evident in such soils as Mexico and Putnam soils, which have a prominent argillic horizon but also are very dark and granular in the topsoil.

Human activity has had a significant impact on soil characteristics. Large areas of forest have been cleared for pasture and row crops. The effect of these activities is an alteration of the biological activity in the soil. Typically, the content of organic matter is reduced as a result of the effects of erosion and crop removal. When topsoil is removed, the remaining surface layer has poor tilth and is difficult to work, especially in areas where the surface layer is clayey.

Climate

Climate has direct and indirect effects on soil formation. The rate of weathering of parent material varies with variations in temperature and moisture. These factors also determine the amount of organic matter that can accumulate. The populations and species of living organisms depend to a great extent on the climatic environment.

Climate can also determine the type of parent material that occurs in a specific area. An example is the introduction of till and loess during glacial periods. The type and extent of alluvial deposits are influenced by river flows, which are in turn influenced by climate.

The severe flooding that impacted the region in 1993 brought on a dramatic display of sudden changes in many areas along the Missouri River.

In historical times the prevailing climate was temperate and featured wide variations in temperature between winter and summer. There have been times of drought and times of high precipitation. The native vegetation under these climatic conditions was a mosaic of prairie and forest environments that competed vigorously with each other for territory. At the time settlers began to alter the face of the land, the climate was shifting to one of wetter conditions. This wetter climate was conducive to forest vegetation (Madson, 1982).

Under the present climate, soil moisture tends to fluctuate seasonally. Commonly, a dry period occurs during late summer and early fall and some degree of wetness occurs during the rest of the year. These conditions cause silicate clays to be leached and accumulated in films on the surface of aggregates in the subsoil. This clay accumulation, or argillic horizon, is characteristic of most of the upland soils in the county.

Relief

Various geologic forces have brought about a diverse landscape in Boone County. Consequently, there is a broad range of landforms in terms of shape, slope, and orientation. These factors influence soil formation in several ways.

On sloping ground there is a tendency for water to run down the hill rather than percolate into the soil. This runoff rate inhibits the soil-forming processes and also accelerates erosion; therefore, soils on backslopes are commonly more shallow and stonier than soils on summits. Mexico and Putnam soils, which have deep layers of fine loess, are in broad upland interfluvies. The adjacent Armstrong and Keswick soils, which are on side slopes and head slopes, have a considerably shallower layer of loess. Bardley soils, which are typically in areas of greater relief on the middle backslopes, are moderately deep and are very gravelly. Clinkenbeard and Gasconade soils, which are downhill from the Bardley soils, are very shallow and are flaggy. Geologic erosion has differentially removed the silt and clay and has left behind accumulations of gravel and flagstones.

Time

The stage of development of a soil depends in part on when soil formation began. Initiation of a soil-forming cycle is associated with geologic events, such

as glaciation, and with local events leading to rapid erosion and deposition (Brady, 1974).

Many of the upland soils in Boone County began developing toward their present stage with the retreat of the Pre-Illinoian ice sheet, approximately half a million years ago (Hallberg, 1986). In particular, development of the current profiles of Keswick and Winnegan soils began at this time. For other soils, such as Armstrong, Hatton, and Mexico soils, the soil-forming processes were changed afterward when fine loess was deposited. Mature soils are characterized by distinct profile development, including an argillic horizon.

Menfro and Winfield soils formed in deep, silty loess near the Missouri River. These soils are less

developed than the finer loess soils in the eastern and northeastern parts of the county. Time of deposition was during the Wisconsin glaciation, between 12,000 and 80,000 years ago.

The youngest soils are in areas where deposition of parent material still occurs periodically during flood conditions. Sandover and Perche soils, for example, have sedimentary planes in the profile, and very little horizon development has taken place.

The rate at which a soil forms depends on the other soil-forming factors (parent material, biological activity, climate, and relief). Therefore, the appearance of the soil profile, although it may reveal the stage of development, is not always a good indicator of the actual age of a soil.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture

capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope. A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Board foot. A unit of measure of the wood in lumber,

logs, or trees. The amount of wood in a board 1 foot wide, 1 foot long, and 1 inch thick before finishing.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Cement rock. Shaly limestone used in the manufacture of cement.

Channeled. Refers to a drainage area in which natural meandering or repeated branching and convergence of a streambed have created deeply incised cuts, either active or abandoned, in alluvial material.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen

hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clayey soil. Silty clay, sandy clay, or clay.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Clearcut. A method of forest harvesting that removes the entire stand of trees in one cutting. Reproduction is achieved artificially or by natural seeding from the adjacent stands.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

Codominant trees. Trees whose crowns form the general level of the forest canopy and that receive full light from above but comparatively little from the sides.

COLE (coefficient of linear extensibility). See Linear extensibility.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern

or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI).

The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Dominant trees. Trees whose crowns form the general level of the forest canopy and that receive full light from above and from the sides.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and*

very poorly drained. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. An area of ground at a lower elevation than the surrounding ground and in which water collects and is drained to a closed depression or lake or to a drainageway at a lower elevation. A drainageway may or may not have distinctly incised channels at its upper reaches or throughout its course.

Droughty (in tables). The soil holds an insufficient amount of water for plants during dry periods.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Even aged. Refers to a stand of trees in which only

small differences in age occur between individual trees. A range of 20 years is allowed.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Excess lime (in tables). Excess carbonates in the soil that restrict the growth of some plants.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. Area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flaggy soil material. Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Footslope. The position that forms the inner, gently inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope

sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Glacial drift. Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

Glacial outwash. Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Glacial till. Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciated uplands. Land areas that were previously covered by continental or alpine glaciers and that are at a higher elevation than the flood plain.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Head slope. A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

Highly erodible (in tables). The soil has a wind erodibility index greater than 8 and is very susceptible to erosion by water.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main

feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interfluv. An elevated area between two drainageways that sheds water to those drainageways.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely

spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $1/3$ - or $1/10$ -bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loamy soil. Coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, silt, clay loam, sandy clay loam, or silty clay loam.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mean annual increment (MAI). The average annual increase in volume of a tree during the entire life of the tree.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Merchantable trees. Trees that are of sufficient size to be economically processed into wood products.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the

greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

Nose slope. A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Overstory. The trees in a forest that form the upper crown cover.

Oxbow. The horseshoe-shaped channel of a former meander, remaining after the stream formed a cutoff across a narrow meander neck.

Paleoterrace. An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly

does not grade to, a present-day stream or drainage network.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment. A thin layer of alluvial material that mantles an erosion surface and has been transported to its present position from higher lying areas of the erosion surface.

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Percolates slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5

Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop. Exposures of bare bedrock other than lava flows and rock-lined pits.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sandy soil. Sand or loamy sand.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Sawlogs. Logs of suitable size and quality for the production of lumber.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope. A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site class. A grouping of site indexes into five to seven production capability levels. Each level can be represented by a site curve.

Site curve (50-year). A set of related curves on a graph that shows the average height of dominant or dominant and codominant trees for a range of ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant or dominant and codominant trees that are 50 years old or are 50 years old at breast height.

Site curve (100-year). A set of related curves on a graph that shows the average height of dominant or dominant and codominant trees for a range of ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant or dominant and codominant trees that are 100 years old or are 100 years old at breast height.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Skid trails. Pathways along which logs are dragged to a common site for loading onto a logging truck.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of

blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of rock fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60

centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Strath terrace. A surface cut formed by the erosion of hard or semiconsolidated bedrock and thinly mantled with stream deposits.

Stream channel. The hollow bed where a natural stream of surface water flows or may flow; the deepest or central part of the bed, formed by the main current and covered more or less continuously by water.

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel. It originally formed near the level of the stream and is the dissected remnants of an abandoned flood plain, streambed, or valley floor produced during a former stage of erosion or deposition.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit. The topographically highest position of a

hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.” The abbreviations (see table 18) are *C—clay, CL—clay loam, COS—coarse sand, COSL—coarse sandy loam, FS—fine sand, FSL—fine sandy loam, L—loam, LCOS—loamy coarse sand, LFS—loamy fine sand, LS—loamy sand, LVFS—loamy very fine sand, S—sand, SC—sandy clay, SCL—sandy clay loam, SI—silt, SIC—silty clay, SICL—silty clay loam, SIL—silt loam, SL—sandy loam, VFS—very fine sand, and VFSL—very fine sandy loam*. Terms used in lieu of texture descriptions are *WB—weathered bedrock* and *UWB—unweathered bedrock*. The texture modifiers that may apply to textural classes are *BY—bouldery, BYV—very bouldery, BYX—extremely bouldery, CB—cobbly, CBV—very cobbly, CBX—extremely cobbly, CN—channery, CNV—very channery, CNX—extremely channery, FL—flaggy, FLV—very flaggy, FLX—extremely flaggy, GR—gravelly, GRV—very gravelly, GRX—extremely gravelly, SR—stratified, ST—stony, STV—very stony, and STX—extremely stony*.

Till plain. An extensive area of nearly level to undulating soils underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Trafficability. The degree to which a soil is capable of supporting vehicular traffic across a wide range in soil moisture conditions.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley. An elongated depressional area primarily developed by stream action.

Water-spreading. Diverting runoff from natural channels by means of a system of dams, dikes, or ditches and spreading it over relatively flat surfaces.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation
(Recorded in the period 1961-90 at Fulton, Missouri.)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have--		Average number of growing degree days*	Average	2 years in 10 will have--		Average number of days with 0.10 inch or more	Average snowfall
				Maximum temperature higher than--	Minimum temperature lower than--			Less than--	More than--		
°F	°F	°F	°F	°F	Units	In	In	In		In	
January----	36.5	16.8	26.7	68	-12	3	1.52	0.48	2.37	3	5.7
February---	41.5	20.8	31.1	72	-7	7	1.79	.70	2.71	3	6.2
March-----	53.2	31.2	42.2	83	7	58	3.08	1.73	4.28	5	3.6
April-----	65.5	42.6	54.1	88	24	193	3.67	2.29	4.93	7	.5
May-----	74.2	51.7	63.0	89	34	401	4.81	3.03	6.41	7	.0
June-----	82.8	60.9	71.9	96	46	654	3.90	1.90	5.62	6	.0
July-----	88.4	65.9	77.2	101	52	831	3.96	2.09	5.60	6	.0
August-----	86.6	63.3	75.0	102	49	769	3.18	1.23	4.81	5	.0
September--	79.6	56.1	67.8	95	38	529	3.96	1.52	6.00	5	.0
October----	68.0	43.9	56.0	89	25	229	3.30	1.33	4.96	5	.0
November---	54.2	33.4	43.8	79	11	56	3.14	1.26	4.72	5	1.5
December---	40.4	21.8	31.1	69	-7	8	2.63	1.18	3.88	5	4.8
Yearly:											
Average---	64.3	42.4	53.3	---	---	---	---	---	---	---	---
Extreme---	---	---	---	103	-14	---	---	---	---	---	---
Total-----	---	---	---	---	---	3,737	38.94	29.10	45.85	62	22.4

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.--Freeze Dates in Spring and Fall
(Recorded in the period 1961-90 at Fulton, Missouri.)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 9	Apr. 15	Apr. 25
2 years in 10 later than--	Apr. 4	Apr. 11	Apr. 21
5 years in 10 later than--	Mar. 25	Apr. 4	Apr. 12
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 27	Oct. 15	Oct. 7
2 years in 10 earlier than--	Nov. 1	Oct. 20	Oct. 11
5 years in 10 earlier than--	Nov. 10	Oct. 29	Oct. 20

Table 3.--Growing Season
(Recorded in the period 1961-90 at Fulton, Missouri.)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	211	190	172
8 years in 10	217	196	178
5 years in 10	229	208	189
2 years in 10	241	221	201
1 year in 10	248	227	207

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
50000	Adco silt loam, 0 to 2 percent slopes-----	7,235	1.6
50001	Armstrong loam, 5 to 9 percent slopes, eroded-----	13,952	3.2
50002	Keswick-Urban land complex, 5 to 9 percent slopes-----	3,215	0.7
50003	Mexico silt loam, 1 to 3 percent slopes-----	11,388	2.6
50004	Mexico silt loam, 1 to 3 percent slopes, eroded-----	33,763	7.6
50005	Mexico-Urban land complex, 1 to 3 percent slopes-----	1,965	0.4
50006	Vanmeter clay loam, 5 to 14 percent slopes-----	3,644	0.8
50007	Vanmeter silty clay, 14 to 40 percent slopes-----	1,639	0.4
50008	Keswick silt loam, 5 to 9 percent slopes, eroded-----	62,755	14.2
50009	Keswick silt loam, 9 to 14 percent slopes, eroded-----	27,668	6.3
50010	Winnegan loam, 14 to 20 percent slopes, eroded-----	12,633	2.9
50011	Winnegan loam, 20 to 35 percent slopes-----	3,206	0.7
50012	Putnam silt loam, 0 to 1 percent slopes-----	2,591	0.6
60003	Menfro silt loam, 9 to 14 percent slopes, eroded-----	4,528	1.0
60008	Menfro silt loam, 20 to 45 percent slopes-----	9,721	2.2
60009	Clinkenbeard-Gasconade-Rock outcrop complex, 35 to 70 percent slopes, extremely stony-----	7,803	1.8
60010	Arisburg silt loam, 1 to 3 percent slopes-----	1,905	0.4
60011	Arisburg silt loam, 3 to 6 percent slopes, eroded-----	2,925	0.7
60012	Bardley-Clinkenbeard complex, 20 to 45 percent slopes, very stony-----	20,795	4.7
60019	Hatton silt loam, 2 to 5 percent slopes, eroded-----	18,586	4.2
60020	Lenzburg silty clay loam, 2 to 9 percent slopes-----	1,111	0.3
60021	Lenzburg channery silty clay loam, 9 to 70 percent slopes-----	4,015	0.9
60022	Leonard silt loam, 2 to 6 percent slopes, eroded-----	35,265	8.0
60023	Marion silt loam, 1 to 3 percent slopes-----	1,638	0.4
60024	Menfro silt loam, 3 to 9 percent slopes, eroded-----	8,459	1.9
60025	Urban land-Harvester complex, 2 to 9 percent slopes-----	4,942	1.1
60026	Weller silt loam, bench, 2 to 5 percent slopes-----	3,485	0.8
60027	Weller silt loam, 2 to 5 percent slopes, eroded-----	6,995	1.6
60028	Weller silt loam, 5 to 9 percent slopes, eroded-----	17,997	4.1
60029	Weller-Urban land complex, 2 to 9 percent slopes-----	3,959	0.9
60030	Winfield silt loam, 5 to 9 percent slopes-----	6,413	1.5
60031	Winfield silt loam, 9 to 14 percent slopes, eroded-----	7,921	1.8
60032	Winfield silt loam, karst, 14 to 45 percent slopes-----	1,405	0.3
60033	Wrengart silt loam, 5 to 9 percent slopes, eroded-----	3,078	0.7
60034	Wrengart silty clay loam, karst, 5 to 14 percent slopes, eroded-----	3,044	0.7
60035	Wrengart-Urban land complex, 9 to 14 percent slopes-----	1,137	0.3
60036	Menfro silt loam, 14 to 20 percent slopes, eroded-----	5,739	1.3
60037	Wrengart silt loam, 9 to 14 percent slopes-----	4,194	0.9
60038	Rochepoint-Bonnefemme complex, 14 to 25 percent slopes-----	9,311	2.1
60039	Rochepoint-Bonnefemme complex, 25 to 40 percent slopes-----	2,141	0.5
64002	Freeburg silt loam, 2 to 5 percent slopes-----	3,147	0.7
64004	Auxvasse silt loam, 0 to 2 percent slopes, rarely flooded-----	1,543	0.3
64005	Moniteau silt loam, 0 to 3 percent slopes, occasionally flooded-----	7,164	1.6
64006	Tanglenook silt loam, 1 to 3 percent slopes, rarely flooded-----	660	0.1
66007	Leta silty clay, 0 to 2 percent slopes, occasionally flooded-----	2,376	0.5
66014	Haymond silt loam, 0 to 3 percent slopes, frequently flooded-----	6,045	1.4
66015	Blake silt loam, 0 to 2 percent slopes, occasionally flooded-----	2,452	0.6
66016	Blake silty clay loam, 0 to 2 percent slopes, frequently flooded-----	787	0.2
66017	Cedargap-Dameron complex, 0 to 2 percent slopes, frequently flooded-----	2,552	0.6
66018	Darwin silty clay loam, 0 to 2 percent slopes, occasionally flooded-----	2,743	0.6
66019	Haynie loam, 0 to 2 percent slopes, occasionally flooded-----	3,564	0.8
66020	Haynie silt loam, 0 to 2 percent slopes, frequently flooded-----	1,245	0.3
66021	Perche loam, 0 to 2 percent slopes, frequently flooded-----	6,119	1.4
66022	Sandover sand, 0 to 2 percent slopes, occasionally flooded-----	948	0.2
66023	Sarpy fine sand, 0 to 2 percent slopes, occasionally flooded-----	662	0.1
66024	Wilbur silt loam, 0 to 2 percent slopes, frequently flooded-----	11,324	2.6
66025	Jemerson silt loam, 0 to 3 percent slopes, rarely flooded-----	1,389	0.3
99000	Pits, quarries-----	427	*
99001	Water-----	2,739	0.6
99003	Miscellaneous water-----	207	*
	Total-----	442,259	100.0

* Less than 0.1 percent.

Table 5.--Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name.)

Map symbol	Soil name
50000	Adco silt loam, 0 to 2 percent slopes
50003	Mexico silt loam, 1 to 3 percent slopes
50004	Mexico silt loam, 1 to 3 percent slopes, eroded
50012	Putnam silt loam, 0 to 1 percent slopes (where drained)
60010	Arisburg silt loam, 1 to 3 percent slopes
60011	Arisburg silt loam, 3 to 6 percent slopes, eroded
60019	Hatton silt loam, 2 to 5 percent slopes, eroded
60022	Leonard silt loam, 2 to 6 percent slopes, eroded (where drained)
60023	Marion silt loam, 1 to 3 percent slopes
60026	Weller silt loam, bench, 2 to 5 percent slopes
60027	Weller silt loam, 2 to 5 percent slopes, eroded
64002	Freeburg silt loam, 2 to 5 percent slopes
64004	Auxvasse silt loam, 0 to 2 percent slopes, rarely flooded
64005	Moniteau silt loam, 0 to 3 percent slopes, occasionally flooded (where drained)
64006	Tanglenook silt loam, 1 to 3 percent slopes, rarely flooded (where drained)
66007	Leta silty clay, 0 to 2 percent slopes, occasionally flooded (where drained)
66014	Raymond silt loam, 0 to 3 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
66015	Blake silt loam, 0 to 2 percent slopes, occasionally flooded
66016	Blake silty clay loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
66017	Cedargap-Dameron complex, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
66018	Darwin silty clay loam, 0 to 2 percent slopes, occasionally flooded (where drained)
66019	Haynie loam, 0 to 2 percent slopes, occasionally flooded
66020	Haynie silt loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
66021	Perche loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
66022	Sandover sand, 0 to 2 percent slopes, occasionally flooded
66024	Wilbur silt loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
66025	Jemerson silt loam, 0 to 3 percent slopes, rarely flooded

Table 6.--Land Capability and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil.)

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Grain sorghum	Orchard- grass-red clover hay	Soybeans	Tall fescue	Winter wheat
		Tons	Bu	Bu	Tons	Bu	AUM*	Bu
50000: Adco-----	2e	3.0	110.0	78.0	3.5	40.0	6.3	48.0
50001: Armstrong----	3e	3.0	85.0	78.0	2.8	31.0	6.2	34.0
50002: Keswick-----	3e	3.0	85.0	75.0	2.8	31.0	6.2	34.0
Urban land.								
50003: Mexico-----	2e	4.0	93.0	87.0	3.0	35.0	5.0	50.0
50004: Mexico-----	3e	4.0	93.0	87.0	3.0	35.0	5.0	50.0
50005: Mexico-----	2e	4.0	90.0	87.0	3.0	30.0	5.0	50.0
Urban land.								
50006: Vanmeter-----	6e	2.6	---	---	2.1	---	3.5	---
50007: Vanmeter-----	7e	---	---	---	2.0	---	3.0	---
50008: Keswick-----	3e	3.4	85.0	72.0	2.7	31.0	6.2	34.0
50009: Keswick-----	4e	3.0	70.0	59.0	2.2	25.0	5.0	27.0
50010: Winnegan-----	6e	2.9	---	---	2.3	---	3.5	---
50011: Winnegan-----	7e	---	---	---	---	---	3.3	---
50012: Putnam-----	2w	---	96.0	85.0	3.4	38.0	7.2	45.0
60003: Menfro-----	3e	4.0	95.0	84.0	3.6	36.0	7.0	39.0
60008: Menfro-----	6e	---	---	---	---	---	5.1	---
60009: Clinkenbeard--	7e	---	---	---	---	---	3.1	---
Gasconade-----	7e	---	---	---	---	---	2.6	---
Rock outcrop.								

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Grain sorghum	Orchard- grass-red clover hay	Soybeans	Tall fescue	Winter wheat
		Tons	Bu	Bu	Tons	Bu	AUM*	Bu
60010: Arisburg-----	2e	4.2	96.0	90.0	3.8	36.0	6.5	40.0
60011: Arisburg-----	2e	4.1	94.0	88.0	3.7	35.0	6.4	39.0
60012: Bardley-----	7e	---	---	---	---	---	3.0	---
Clinkenbeard--	7e	---	---	---	---	---	3.1	---
60019: Hatton-----	3e	3.1	82.0	80.0	2.8	35.0	7.4	50.0
60020: Lenzburg-----	4e	2.9	73.0	75.0	2.6	22.0	5.0	24.0
60021: Lenzburg-----	7e	---	---	---	---	---	4.4	---
60022: Leonard-----	3e	---	80.0	70.0	2.6	30.0	7.2	32.0
60023: Marion-----	3e	3.6	85.0	75.0	3.2	32.0	4.8	34.0
60024: Menfro-----	3e	4.4	106.0	93.0	3.8	40.0	7.0	44.0
60025: Urban land. Harvester-----	7s	---	---	---	---	---	---	---
60026: Weller-----	3e	3.6	94.0	83.0	3.4	35.0	5.3	38.0
60027: Weller-----	3e	3.6	94.0	83.0	3.4	35.0	5.3	38.0
60028: Weller-----	3e	3.3	85.0	73.0	3.0	31.0	6.0	34.0
60029: Weller-----	3e	3.3	85.0	73.0	3.0	31.0	6.0	34.0
Urban land.								
60030: Winfield-----	3e	4.2	108.0	94.0	3.7	40.0	7.5	44.0
60031: Winfield-----	3e	4.2	88.0	80.0	3.7	34.0	7.0	37.0
60032: Winfield-----	6e	3.2	---	---	2.9	---	5.6	---
60033: Wrengart-----	3e	3.0	86.0	75.0	2.8	32.0	4.2	36.0

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Grain sorghum	Orchard- grass-red clover hay	Soybeans	Tall fescue	Winter wheat
		Tons	Bu	Bu	Tons	Bu	AUM*	Bu
60034: Wrengart-----	4e	2.8	70.0	60.0	2.6	26.0	3.7	28.0
60035: Wrengart-----	4e	2.6	70.0	60.0	2.4	26.0	3.7	28.0
Urban land.								
60036: Menfro-----	4e	4.0	74.0	65.0	3.6	27.0	5.6	30.0
60037: Wrengart-----	4e	2.6	70.0	60.0	2.3	26.0	3.7	28.0
60038: Rocheport-----	6e	2.4	---	---	2.1	---	3.3	---
Bonnefemme----	6e	2.3	---	---	2.0	---	3.2	---
60039: Rocheport-----	7e	---	---	---	---	---	2.9	---
Bonnefemme----	7e	---	---	---	---	---	2.8	---
64002: Freeburg-----	3e	4.1	110.0	95.0	3.8	40.0	7.0	44.0
64004: Auxvasse-----	3w	---	88.0	80.0	2.6	34.0	7.0	37.0
64005: Moniteau-----	3w	---	101.0	88.0	2.7	37.0	7.4	41.0
64006: Tanglenook----	3w	---	102.0	89.0	3.8	37.0	7.3	41.0
66007: Leta-----	2w	---	100.0	88.0	2.7	38.0	7.3	42.0
66014: Haymond-----	2w	---	110.0	90.0	3.6	39.0	8.0	42.0
66015: Blake-----	2w	---	132.0	110.0	4.0	44.0	8.3	46.0
66016: Blake-----	2w	---	132.0	110.0	4.0	44.0	8.3	46.0
66017: Cedargap-----	3w	---	72.0	58.0	2.7	25.0	6.5	30.0
Dameron-----	2w	---	80.0	70.0	3.2	30.0	7.0	40.0
66018: Darwin-----	3w	2.4	87.0	75.0	2.6	31.0	4.8	35.0
66019: Haynie-----	2w	3.1	114.0	98.0	3.7	41.0	7.0	46.0

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Grain sorghum	Orchard- grass-red clover hay	Soybeans	Tall fescue	Winter wheat
		Tons	Bu	Bu	Tons	Bu	AUM*	Bu
66020: Haynie-----	3w	---	108.0	96.0	3.5	34.0	6.8	41.0
66021: Perche-----	2w	---	105.0	95.0	3.4	35.0	7.0	42.0
66022: Sandover-----	2w	---	85.0	75.0	3.1	30.0	6.5	35.0
66023: Sarpy-----	4s	1.2	47.0	39.0	1.0	17.0	2.3	17.0
66024: Wilbur-----	2w	---	115.0	95.0	3.7	40.0	7.8	45.0
66025: Jemerson-----	1	4.9	136.0	118.0	4.0	50.0	8.6	59.0
99000: Pits-----	8s	---	---	---	---	---	---	---
99001: Water.								
99003: Miscellaneous water.								

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Table 7.--Pasture and Hayland Suitability Groups

(See text for descriptions of the groups listed in this table.)

Map symbol	Map unit name	Component name	Pasture and hayland group
50000	Adco silt loam, 0 to 2 percent slopes-----	Adco	CyU
50001	Armstrong loam, 5 to 9 percent slopes, eroded-----	Armstrong	CyU
50002	Keswick-Urban land complex, 5 to 9 percent slopes-----	Keswick	CyU
		Urban land	---
50003	Mexico silt loam, 1 to 3 percent slopes-----	Mexico	CyU
50004	Mexico silt loam, 1 to 3 percent slopes, eroded-----	Mexico	CyU
50005	Mexico-Urban land complex, 1 to 3 percent slopes-----	Mexico	CyU
		Urban land	---
50006	Vanmeter clay loam, 5 to 14 percent slopes-----	Vanmeter	MDU
50007	Vanmeter silty clay, 14 to 40 percent slopes-----	Vanmeter	MDU
50008	Keswick silt loam, 5 to 9 percent slopes, eroded-----	Keswick	CyU
50009	Keswick silt loam, 9 to 14 percent slopes, eroded-----	Keswick	CyU
50010	Winnegan loam, 14 to 20 percent slopes, eroded-----	Winnegan	CyU
50011	Winnegan loam, 20 to 35 percent slopes-----	Winnegan	CyU
50012	Putnam silt loam, 0 to 1 percent slopes-----	Putnam	WCU
60003	Menfro silt loam, 9 to 14 percent slopes, eroded-----	Menfro	LyU
60008	Menfro silt loam, 20 to 45 percent slopes-----	Menfro	LyU
60009	Clinkenbeard-Gasconade-Rock outcrop complex, 35 to 70 percent slopes, extremely stony-----	Clinkenbeard	GNS
		Gasconade	GNS
		Rock outcrop	---
60010	Arisburg silt loam, 1 to 3 percent slopes-----	Arisburg	CyU
60011	Arisburg silt loam, 3 to 6 percent slopes, eroded-----	Arisburg	CyU
60012	Bardley-Clinkenbeard complex, 20 to 45 percent slopes, very stony-----	Bardley	MDU
		Clinkenbeard	MDU
60019	Hatton silt loam, 2 to 5 percent slopes, eroded-----	Hatton	LyP
60020	Lenzburg silty clay loam, 2 to 9 percent slopes-----	Lenzburg	LyU
60021	Lenzburg channery silty clay loam, 9 to 70 percent slopes-----	Lenzburg	GrU
60022	Leonard silt loam, 2 to 6 percent slopes, eroded-----	Leonard	WCU
60023	Marion silt loam, 1 to 3 percent slopes-----	Marion	WCU
60024	Menfro silt loam, 3 to 9 percent slopes, eroded-----	Menfro	LyU
60025	Urban land-Harvester complex, 2 to 9 percent slopes-----	Urban land	---
		Harvester	LyU
60026	Weller silt loam, bench, 2 to 5 percent slopes-----	Weller	CyU
60027	Weller silt loam, 2 to 5 percent slopes, eroded-----	Weller	CyU
60028	Weller silt loam, 5 to 9 percent slopes, eroded-----	Weller	CyU
60029	Weller-Urban land complex, 2 to 9 percent slopes-----	Weller	CyU
		Urban land	---
60030	Winfield silt loam, 5 to 9 percent slopes-----	Winfield	LyU
60031	Winfield silt loam, 9 to 14 percent slopes, eroded-----	Winfield	LyU
60032	Winfield silt loam, karst, 14 to 45 percent slopes-----	Winfield	LyU
60033	Wrengart silt loam, 5 to 9 percent slopes, eroded-----	Wrengart	LyP
60034	Wrengart silty clay loam, karst, 5 to 14 percent slopes, eroded-----	Wrengart	LyP
60035	Wrengart-Urban land complex, 9 to 14 percent slopes-----	Wrengart	LyP
		Urban land	---
60036	Menfro silt loam, 14 to 20 percent slopes, eroded-----	Menfro	LyU
60037	Wrengart silt loam, 9 to 14 percent slopes-----	Wrengart	LyP
60038	Rocheport-Bonnefemme complex, 14 to 25 percent slopes-----	Rocheport	LyU
		Bonnefemme	MDU
60039	Rocheport-Bonnefemme complex, 25 to 40 percent slopes-----	Rocheport	LyU
		Bonnefemme	MDU
64002	Freeburg silt loam, 2 to 5 percent slopes-----	Freeburg	WLO
64004	Auxvasse silt loam, 0 to 2 percent slopes, rarely flooded-----	Auxvasse	WCB
64005	Moniteau silt loam, 0 to 3 percent slopes, occasionally flooded-----	Moniteau	WLB
64006	Tanglenook silt loam, 1 to 3 percent slopes, rarely flooded-----	Tanglenook	WCB
66007	Leta silty clay, 0 to 2 percent slopes, occasionally flooded-----	Leta	WCB
66014	Haymond silt loam, 0 to 3 percent slopes, frequently flooded-----	Haymond	LyO
66015	Blake silt loam, 0 to 2 percent slopes, occasionally flooded-----	Blake	WLO
66016	Blake silty clay loam, 0 to 2 percent slopes, frequently flooded-----	Blake	WLO

Table 7.--Pasture and Hayland Suitability Groups--Continued

Map symbol	Map unit name	Component name	Pasture and hayland group
66017	Cedargap-Dameron complex, 0 to 2 percent slopes, frequently flooded-----	Cedargap	GrO
		Dameron	LyO
66018	Darwin silty clay loam, 0 to 2 percent slopes, occasionally flooded-----	Darwin	WCB
66019	Haynie loam, 0 to 2 percent slopes, occasionally flooded-----	Haynie	WLO
66020	Haynie silt loam, 0 to 2 percent slopes, frequently flooded-----	Haynie	WLO
66021	Perche loam, 0 to 2 percent slopes, frequently flooded-----	Perche	WLO
66022	Sandover sand, 0 to 2 percent slopes, occasionally flooded-----	Sandover	WLO
66023	Sarpy fine sand, 0 to 2 percent slopes, occasionally flooded-----	Sarpy	SyO
66024	Wilbur silt loam, 0 to 2 percent slopes, frequently flooded-----	Wilbur	WLO
66025	Jemerson silt loam, 0 to 3 percent slopes, rarely flooded-----	Jemerson	LyO
99000	Pits, quarries-----	Pits	---
99001	Water-----	Water	---
99003	Miscellaneous water-----	Miscellaneous water	---

Table 8.--Forest Productivity

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available.)

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber*	
50001: Armstrong-----	Northern red oak----	55	43	White oak, northern red oak.
	White oak-----	55	43	
50002: Keswick-----	Northern red oak----	55	43	White oak, northern red oak, black oak.
	White oak-----	55	43	
Urban land.				
50006: Vanmeter-----	White oak-----	45	29	Black oak, eastern redcedar.
50007: Vanmeter-----	White oak-----	45	29	Black oak, eastern redcedar.
50008: Keswick-----	Northern red oak----	55	43	White oak, northern red oak, black oak.
	White oak-----	55	43	
50009: Keswick-----	Northern red oak----	55	43	White oak, northern red oak, black oak.
	White oak-----	55	43	
50010: Winnegan-----	Black oak-----	---	---	Black oak, northern red oak, white ash, white oak.
	Blackjack oak-----	---	---	
	Post oak-----	---	---	
	White oak-----	60	43	
50011: Winnegan-----	Black oak-----	---	---	Black oak, northern red oak, white ash, white oak.
	Blackjack oak-----	---	---	
	Post oak-----	---	---	
	White oak-----	60	43	
60003: Menfro-----	Black oak-----	73	57	Black walnut, white ash, sugar maple, northern red oak.
	Northern red oak----	81	57	
	Sugar maple-----	68	43	
	White ash-----	70	43	
	White oak-----	59	43	

See footnote at end of table.

Table 8.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber*	
60008: Menfro-----	Black oak-----	73	---	Black walnut, white ash, white oak, northern red oak, sugar maple.
	Northern red oak----	81	---	
	Sugar maple-----	68	---	
	White ash-----	70	---	
	White oak-----	59	---	
60009: Clinkenbeard-----	Eastern redcedar----	---	---	Eastern redcedar.
	Post oak-----	40	29	
Gasconade-----	Blackjack oak-----	---	---	Eastern redcedar.
	Chinkapin oak-----	41	29	
	Eastern redcedar----	27	29	
	Post oak-----	---	---	
Rock outcrop.				
60012: Bardley-----	Black oak-----	54	43	Black oak, eastern redcedar, shortleaf pine.
	Post oak-----	48	29	
	White oak-----	42	29	
Clinkenbeard-----	Eastern redcedar----	---	---	Eastern redcedar.
	Post oak-----	40	29	
60019: Hatton-----	Black oak-----	61	43	Black oak, bur oak, scarlet oak, white ash, white oak.
	White oak-----	56	43	
60020: Lenzburg-----	Black walnut-----	73	---	Black walnut, eastern cottonwood, green ash, white ash.
	Eastern cottonwood--	---	---	
60021: Lenzburg-----	Black walnut-----	73	---	Black walnut, eastern cottonwood, green ash, white ash.
	Eastern cottonwood--	---	---	
60023: Marion-----	Post oak-----	---	---	Pin oak, eastern cottonwood, green ash.
	White oak-----	50	29	

See footnote at end of table.

Table 8.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber*	
60024: Menfro-----	Black oak----- Northern red oak---- Sugar maple----- White ash----- White oak-----	73 81 68 70 59	57 57 43 43 43	Black walnut, white ash, northern red oak, white oak, sugar maple.
60026: Weller-----	White oak-----	55	43	Black walnut, white oak, sugar maple.
60027: Weller-----	White oak-----	55	43	Black walnut, white oak, sugar maple.
60028: Weller-----	White oak-----	55	43	Black walnut, white oak, sugar maple.
60029: Weller-----	White oak-----	55	43	Black walnut, white oak, sugar maple.
Urban land.				
60030: Winfield-----	Black oak----- Northern red oak---- White oak-----	65 60 65	43 43 43	Black oak, white oak, green ash, northern red oak.
60031: Winfield-----	Black oak----- Northern red oak---- White oak-----	65 60 65	43 43 43	Black oak, white oak, green ash, northern red oak.
60032: Winfield-----	Black oak----- Northern red oak---- White oak-----	65 60 65	43 43 43	Black oak, white oak, green ash, northern red oak.
60033: Wrengart-----	Black oak----- Northern red oak---- Shagbark hickory---- White oak-----	63 --- --- 53	43 --- --- 43	Black oak, northern red oak, shortleaf pine, white oak.

See footnote at end of table.

Table 8.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber*	
60034: Wrengart-----	Black oak-----	63	43	Black oak, northern red oak, shortleaf pine, white oak.
	Northern red oak----	---	---	
	Shagbark hickory----	---	---	
	White oak-----	53	43	
60035: Wrengart-----	Black oak-----	63	43	Black oak, northern red oak, shortleaf pine, white oak.
	Northern red oak----	---	---	
	Shagbark hickory----	---	---	
	White oak-----	53	43	
Urban land.				
60036: Menfro-----	Black oak-----	73	57	Black walnut, white ash, northern red oak, white oak, sugar maple.
	Northern red oak----	81	57	
	Sugar maple-----	68	43	
	White ash-----	70	43	
	White oak-----	59	43	
60037: Wrengart-----	Black oak-----	63	43	Black oak, northern red oak, shortleaf pine, white oak.
	Northern red oak----	---	---	
	Shagbark hickory----	---	---	
	White oak-----	53	43	
60038: Rocheport-----	Black oak-----	65	57	Black oak, northern red oak.
	Northern red oak----	60	57	
	White oak-----	65	57	
Bonnefemme-----	Black oak-----	55	43	Black oak, eastern redcedar.
	Post oak-----	50	29	
60039: Rocheport-----	Black oak-----	65	57	Northern red oak, black oak.
	Northern red oak----	60	57	
	White oak-----	65	57	
Bonnefemme-----	Black oak-----	55	43	Black oak, eastern redcedar.
	Post oak-----	50	29	
64002: Freeburg-----	White oak-----	65	43	Black oak, eastern cottonwood, green ash, pecan, pin oak, white oak.
64004: Auxvasse-----	Green ash-----	---	---	Eastern cottonwood, green ash, pin oak, silver maple.
	Northern red oak----	---	---	
	Pin oak-----	76	57	
	Silver maple-----	---	---	

See footnote at end of table.

Table 8.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber*	
64005: Moniteau-----	Pin oak-----	70	57	Black willow, eastern cottonwood, green ash, pin oak, silver maple.
64006: Tanglenook-----	Eastern cottonwood--	90	100	American sycamore, common hackberry, eastern cottonwood, green ash, pin oak, silver maple.
	Silver maple-----	80	29	
66007: Leta-----	Black willow-----	---	---	Eastern cottonwood, green ash, pecan, silver maple.
	Eastern cottonwood--	90	100	
	Silver maple-----	85	43	
66014: Haymond-----	American sycamore---	---	---	Black cherry, white oak, black walnut, white ash, northern red oak.
	Black walnut-----	70	---	
	White oak-----	90	72	
66015: Blake-----	American sycamore---	---	---	American sycamore, eastern cottonwood, green ash, silver maple.
	Eastern cottonwood--	115	172	
	Silver maple-----	---	---	
66016: Blake-----	American sycamore---	---	---	American sycamore, eastern cottonwood, green ash, silver maple.
	Eastern cottonwood--	115	172	
	Silver maple-----	---	---	
66017: Cedargap-----	Black oak-----	66	43	Black oak, shortleaf pine.
Dameron-----	American sycamore---	---	---	Black walnut, green ash, pecan.
	Black walnut-----	72	---	
	Green ash-----	70	72	
	White oak-----	---	---	
66018: Darwin-----	American sycamore---	---	---	American sycamore, eastern cottonwood, green ash, pin oak.
	Eastern cottonwood--	---	---	
	Green ash-----	---	---	
	Pin oak-----	80	57	
	Swamp white oak-----	---	---	

See footnote at end of table.

Table 8.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber*	
66019: Haynie-----	American sycamore---	---	---	Black walnut, eastern cottonwood, green ash.
	Black walnut-----	---	---	
	Common hackberry---	---	---	
	Eastern cottonwood--	105	143	
	Green ash-----	---	---	
66020: Haynie-----	American sycamore---	110	157	Black walnut, eastern cottonwood, green ash.
	Black walnut-----	---	---	
	Eastern cottonwood--	110	157	
	Green ash-----	---	---	
66021: Perche-----	Green ash-----	85	---	Pecan, white oak.
	Northern red oak----	66	43	
	Sugar maple-----	---	---	
66022: Sandover-----	Eastern cottonwood--	85	86	Eastern cottonwood, green ash.
	Pin oak-----	75	57	
	Willow-----	---	---	
66023: Sarpy-----	Eastern cottonwood--	95	114	American sycamore, eastern cottonwood, silver maple.
66024: Wilbur-----	American sycamore---	---	---	Black cherry, bur oak, green ash, pin oak.
	Pin oak-----	---	---	
66025: Jemerson-----	Black oak-----	65	43	Black oak, green ash, northern red oak, black walnut.
	Northern red oak----	60	43	
	White oak-----	65	43	

* Volume of wood fiber is the yield in cubic feet per acre per year calculated at the age of culmination of the mean annual increment for fully stocked, even-aged, unmanaged stands.

Table 9a.--Forest Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50000: Adco-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.25	Slightly limited: seasonal wetness (slightly limited)	0.25	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.25
50001: Armstrong----	Not limited		Slightly limited: slope (slightly limited)	0.20	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20	Slightly limited: seasonal wetness (slightly limited)	0.20	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited) slope (slightly limited)	0.50 0.20 0.15
50002: Keswick-----	Not limited		Slightly limited: slope (slightly limited)	0.10	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20	Slightly limited: seasonal wetness (slightly limited)	0.20	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50003: Mexico-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.25	Slightly limited: seasonal wetness (slightly limited)	0.25	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.25
50004: Mexico-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.25	Slightly limited: seasonal wetness (slightly limited)	0.25	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.25

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50005: Mexico-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.25	Slightly limited: seasonal wetness (slightly limited)	0.25	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.25
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50006: Vanmeter-----	Not limited		Slightly limited: slope (slightly limited)	0.30	Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited) slope (moderately limited)	0.50 0.30
50007: Vanmeter-----	Moderately limited: stickiness (surface) (moderately limited) slope (slightly limited)	0.50 0.16	Very limited: slope (very limited) stickiness (surface) (moderately limited)	1.00 0.50	Limited: slope (limited) stickiness (surface) (moderately limited) low strength (moderately limited)	0.68 0.50 0.50	Limited: slope (limited) stickiness (surface) (moderately limited)	0.68 0.50	Very limited: slope (very limited) stickiness (surface) (moderately limited) low strength (moderately limited)	1.00 0.50 0.50
50008: Keswick-----	Not limited		Slightly limited: slope (slightly limited)	0.10	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20	Slightly limited: seasonal wetness (slightly limited)	0.20	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20
50009: Keswick-----	Not limited		Moderately limited: slope (moderately limited)	0.47	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20	Slightly limited: seasonal wetness (slightly limited)	0.20	Limited: slope (limited) low strength (moderately limited) seasonal wetness (slightly limited)	0.76 0.50 0.20
50010: Winnegan-----	Slightly limited: slope (slightly limited)	0.07	Limited: slope (limited)	0.80	Moderately limited: low strength (moderately limited) slope (moderately limited)	0.50 0.30	Moderately limited: slope (moderately limited)	0.30	Very limited: slope (very limited) low strength (moderately limited)	1.00 0.50

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50011: Winnegan-----	Slightly limited: slope (slightly limited)	0.19	Very limited: slope (very limited)	1.00	Limited: slope (limited) low strength (moderately limited)	0.76 0.50	Limited: slope (limited)	0.76	Very limited: slope (very limited) low strength (moderately limited)	1.00 0.50
50012: Putnam-----	Moderately limited: seasonal wetness (moderately limited)	0.60	Moderately limited: seasonal wetness (moderately limited)	0.60	Moderately limited: seasonal wetness (moderately limited) low strength (moderately limited)	0.60 0.50	Moderately limited: seasonal wetness (moderately limited)	0.60	Moderately limited: seasonal wetness (moderately limited) low strength (moderately limited)	0.60 0.50
60003: Menfro-----	Not limited		Moderately limited: slope (moderately limited)	0.43	Moderately limited: low strength (moderately limited)	0.50	Not limited		Limited: slope (limited) low strength (moderately limited)	0.68 0.50
60008: Menfro-----	Slightly limited: slope (slightly limited)	0.23	Very limited: slope (very limited)	1.00	Limited: slope (limited) low strength (moderately limited)	0.87 0.50	Limited: slope (limited)	0.87	Very limited: slope (very limited) low strength (moderately limited)	1.00 0.50
60009: Clinkenbeard--	Limited: large stones (limited) stickiness (surface) (moderately limited) slope (moderately limited)	0.60 0.50 0.47	Very limited: slope (very limited) large stones >35% (very limited) surface stones (moderately limited)	1.00 0.99 0.60	Very limited: slope (very limited) stickiness (surface) (moderately limited) large surface stones (slightly limited)	1.00 0.50 0.01	Very limited: slope (very limited) large stones (limited) stickiness (surface) (moderately limited)	1.00 0.60 0.50	Very limited: slope (very limited) stickiness (surface) (moderately limited) large surface stones (slightly limited)	1.00 0.50 0.01
Gasconade-----	Limited: slope (limited) large stones (limited) stickiness (surface) (moderately limited)	0.72 0.60 0.50	Very limited: slope (very limited) large stones >35% (very limited) surface stones (moderately limited)	1.00 0.99 0.60	Very limited: slope (very limited) stickiness (surface) (moderately limited) large surface stones (slightly limited)	1.00 0.50 0.01	Very limited: slope (very limited) large stones (limited) stickiness (surface) (moderately limited)	1.00 0.60 0.50	Very limited: slope (very limited) stickiness (surface) (moderately limited) large surface stones (slightly limited)	1.00 0.50 0.01
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60010: Arisburg-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20	Slightly limited: seasonal wetness (slightly limited)	0.20	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20
60011: Arisburg-----	Not limited		Slightly limited: slope (slightly limited)	0.10	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20	Slightly limited: seasonal wetness (slightly limited)	0.20	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20
60012: Bardley-----	Slightly limited: slope (slightly limited) large stones (slightly limited)	0.20 0.03	Very limited: slope (very limited) surface stones (moderately limited) large stones (moderately limited)	1.00 0.45 0.30	Limited: slope (limited) low strength (moderately limited)	0.79 0.50	Limited: slope (limited) large stones (slightly limited)	0.79 0.03	Very limited: slope (very limited) low strength (moderately limited)	1.00 0.50
Clinkenbeard--	Limited: large stones (limited) stickiness (surface) (moderately limited) slope (moderately limited)	0.68 0.50 0.46	Very limited: large stones >35% (very limited) slope (very limited) stickiness (surface) (moderately limited)	1.00 1.00 0.50	Very limited: slope (very limited) stickiness (surface) (moderately limited)	1.00 0.50	Very limited: slope (very limited) large stones (limited) stickiness (surface) (moderately limited)	1.00 0.68 0.50	Very limited: slope (very limited) stickiness (surface) (moderately limited)	1.00 0.50
60019: Hatton-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.10	Slightly limited: seasonal wetness (slightly limited)	0.10	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.10
60020: Lenzburg-----	Moderately limited: stickiness (surface) (moderately limited)	0.50	Moderately limited: stickiness (surface) (moderately limited)	0.50	Moderately limited: low strength (moderately limited) stickiness (surface) (moderately limited)	0.50 0.50	Moderately limited: stickiness (surface) (moderately limited)	0.50	Moderately limited: low strength (moderately limited) stickiness (surface) (moderately limited)	0.50 0.50

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60021: Lenzburg-----	Very limited: slope (very limited) stickiness (surface) (moderately limited) small stones (slightly limited)	1.00 0.50 0.01	Very limited: slope (very limited) stickiness (surface) (moderately limited) small stones (slightly limited)	1.00 0.50 0.01	Very limited: slope (very limited) stickiness (surface) (moderately limited)	1.00 0.50	Very limited: slope (very limited) stickiness (surface) (moderately limited)	1.00 0.50	Very limited: slope (very limited) stickiness (surface) (moderately limited)	1.00 0.50
60022: Leonard-----	Moderately limited: stickiness (surface) (moderately limited)	0.50	Moderately limited: stickiness (surface) (moderately limited)	0.50	Moderately limited: low strength (moderately limited) stickiness (surface) (moderately limited) seasonal wetness (moderately limited)	0.50 0.50 0.45	Moderately limited: stickiness (surface) (moderately limited) seasonal wetness (moderately limited)	0.50 0.45	Moderately limited: low strength (moderately limited) stickiness (surface) (moderately limited) seasonal wetness (moderately limited)	0.50 0.50 0.45
60023: Marion-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.29	Slightly limited: seasonal wetness (slightly limited)	0.29	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.29
60024: Menfro-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50
60025: Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
Harvester-----	Moderately limited: stickiness (surface) (moderately limited)	0.50	Moderately limited: stickiness (surface) (moderately limited)	0.50	Moderately limited: stickiness (surface) (moderately limited) low strength (moderately limited)	0.50 0.50	Moderately limited: stickiness (surface) (moderately limited)	0.50	Moderately limited: stickiness (surface) (moderately limited) low strength (moderately limited)	0.50 0.50
60026: Weller-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50
60027: Weller-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60028: Weller-----	Not limited		Slightly limited: slope (slightly limited)	0.10	Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50
60029: Weller-----	Not limited		Slightly limited: slope (slightly limited)	0.10	Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60030: Winfield-----	Not limited		Slightly limited: slope (slightly limited)	0.30	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.10	Slightly limited: seasonal wetness (slightly limited)	0.10	Moderately limited: low strength (moderately limited) slope (moderately limited) seasonal wetness (slightly limited)	0.50 0.30 0.10
60031: Winfield-----	Not limited		Moderately limited: slope (moderately limited)	0.43	Moderately limited: low strength (moderately limited)	0.50	Not limited		Limited: slope (limited) low strength (moderately limited)	0.68 0.50
60032: Winfield-----	Slightly limited: slope (slightly limited)	0.29	Very limited: slope (very limited)	1.00	Limited: slope (limited) low strength (moderately limited) seasonal wetness (slightly limited)	0.99 0.50 0.16	Limited: slope (limited) seasonal wetness (slightly limited)	0.99 0.16	Very limited: slope (very limited) low strength (moderately limited) seasonal wetness (slightly limited)	1.00 0.50 0.16
60033: Wrengart-----	Not limited		Slightly limited: slope (slightly limited)	0.10	Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60034: Wrengart-----	Not limited		Moderately limited: slope (moderately limited)	0.39	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20	Slightly limited: seasonal wetness (slightly limited)	0.20	Moderately limited: slope (moderately limited) low strength (moderately limited) seasonal wetness (slightly limited)	0.60 0.50 0.20
60035: Wrengart-----	Not limited		Moderately limited: slope (moderately limited)	0.39	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20	Slightly limited: seasonal wetness (slightly limited)	0.20	Moderately limited: slope (moderately limited) low strength (moderately limited) seasonal wetness (slightly limited)	0.60 0.50 0.20
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60036: Menfro-----	Slightly limited: slope (slightly limited)	0.02	Limited: slope (limited)	0.64	Moderately limited: low strength (moderately limited) slope (slightly limited)	0.50 0.10	Slightly limited: slope (slightly limited)	0.10	Moderately limited: low strength (moderately limited)	0.50
60037: Wrengart-----	Not limited		Moderately limited: slope (moderately limited)	0.47	Moderately limited: low strength (moderately limited)	0.50	Not limited		Limited: slope (limited) low strength (moderately limited)	0.76 0.50
60038: Rocheport-----	Slightly limited: slope (slightly limited)	0.04	Limited: slope (limited)	0.68	Moderately limited: low strength (moderately limited) slope (slightly limited)	0.50 0.15	Slightly limited: slope (slightly limited)	0.15	Very limited: slope (very limited) low strength (moderately limited)	1.00 0.50
Bonnefemme----	Slightly limited: slope (slightly limited)	0.10	Limited: slope (limited)	0.87	Moderately limited: low strength (moderately limited) slope (moderately limited)	0.50 0.42	Moderately limited: slope (moderately limited)	0.42	Very limited: slope (very limited) low strength (moderately limited)	1.00 0.50

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60039: Rocheport-----	Slightly limited: slope (slightly limited)	0.25	Very limited: slope (very limited)	1.00	Limited: slope (limited) low strength (moderately limited) seasonal wetness (slightly limited)	0.91 0.50 0.10	Limited: slope (limited) seasonal wetness (slightly limited)	0.91 0.10	Very limited: slope (very limited) low strength (moderately limited) seasonal wetness (slightly limited)	1.00 0.50 0.10
Bonnefemme----	Slightly limited: slope (slightly limited)	0.23	Very limited: slope (very limited)	1.00	Limited: slope (limited) low strength (moderately limited)	0.87 0.50	Limited: slope (limited)	0.87	Very limited: slope (very limited) low strength (moderately limited)	1.00 0.50
64002: Freeburg-----	Not limited		Not limited		Moderately limited: seasonal wetness (moderately limited) low strength (moderately limited)	0.56 0.50	Moderately limited: seasonal wetness (moderately limited)	0.56	Moderately limited: seasonal wetness (moderately limited) low strength (moderately limited)	0.56 0.50
64004: Auxvasse-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.29	Slightly limited: seasonal wetness (slightly limited)	0.29	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.29
64005: Moniteau-----	Moderately limited: seasonal wetness (moderately limited)	0.60	Moderately limited: seasonal wetness (moderately limited)	0.60	Limited: seasonal wetness (limited) low strength (moderately limited)	0.91 0.50	Limited: seasonal wetness (limited)	0.91	Limited: seasonal wetness (limited) flooding (moderately limited) low strength (moderately limited)	0.91 0.60 0.50
64006: Tanglenook----	Moderately limited: seasonal wetness (moderately limited)	0.60	Moderately limited: seasonal wetness (moderately limited)	0.60	Limited: seasonal wetness (limited) low strength (moderately limited)	0.76 0.50	Limited: seasonal wetness (limited)	0.76	Limited: seasonal wetness (limited) low strength (moderately limited)	0.76 0.50

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66007: Leta-----	Limited: stickiness (surface) (limited)	0.75	Limited: stickiness (surface) (limited)	0.75	Limited: stickiness (surface) (limited) low strength (moderately limited) seasonal wetness (slightly limited)	0.75 0.50 0.20	Limited: stickiness (surface) (limited) seasonal wetness (slightly limited)	0.75 0.20	Limited: stickiness (surface) (limited) flooding (moderately limited) low strength (moderately limited)	0.75 0.60 0.50
66014: Haymond-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Very limited: flooding (very limited) low strength (moderately limited)	1.00 0.50
66015: Blake-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: flooding (moderately limited) low strength (moderately limited)	0.60 0.50
66016: Blake-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Very limited: flooding (very limited) low strength (moderately limited)	1.00 0.50
66017: Cedargap-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Very limited: flooding (very limited) low strength (moderately limited)	1.00 0.50
Dameron-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Very limited: flooding (very limited) low strength (moderately limited)	1.00 0.50

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66018: Darwin-----	Moderately limited: seasonal wetness (moderately limited) stickiness (surface) (moderately limited)	0.60 0.50	Moderately limited: seasonal wetness (moderately limited) stickiness (surface) (moderately limited)	0.60 0.50	Limited: seasonal wetness (limited) stickiness (surface) (moderately limited) low strength (moderately limited)	0.76 0.50 0.50	Limited: seasonal wetness (limited) stickiness (surface) (moderately limited)	0.76 0.50	Limited: seasonal wetness (limited) flooding (moderately limited) stickiness (surface) (moderately limited)	0.76 0.60 0.50
66019: Haynie-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: flooding (moderately limited) low strength (moderately limited)	0.60 0.50
66020: Haynie-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Very limited: flooding (very limited) low strength (moderately limited)	1.00 0.50
66021: Perche-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20	Slightly limited: seasonal wetness (slightly limited)	0.20	Very limited: flooding (very limited) low strength (moderately limited) seasonal wetness (slightly limited)	1.00 0.50 0.20
66022: Sandover-----	Moderately limited: very sandy (surface) (moderately limited)	0.50	Moderately limited: very sandy (surface) (moderately limited)	0.50	Moderately limited: very sandy (surface) (moderately limited) seasonal wetness (slightly limited)	0.50 0.10	Slightly limited: seasonal wetness (slightly limited)	0.10	Moderately limited: flooding (moderately limited) very sandy (surface) (moderately limited) seasonal wetness (slightly limited)	0.60 0.50 0.10
66023: Sarpy-----	Moderately limited: very sandy (surface) (moderately limited)	0.50	Moderately limited: very sandy (surface) (moderately limited)	0.50	Moderately limited: very sandy (surface) (moderately limited)	0.50	Not limited		Moderately limited: flooding (moderately limited) very sandy (surface) (moderately limited)	0.60 0.50

Table 9a.--Forest Management--Continued

Map symbol and soil name	Hand planting		Mechanical planting		Use of harvesting equipment		Mechanical site preparation (surface)		Roads (natural surface)	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66024: Wilbur-----	Not limited		Not limited		Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20	Slightly limited: seasonal wetness (slightly limited)	0.20	Very limited: flooding (very limited) low strength (moderately limited) seasonal wetness (slightly limited)	1.00 0.50 0.20
66025: Jemerson-----	Not limited		Not limited		Moderately limited: low strength (moderately limited)	0.50	Not limited		Moderately limited: low strength (moderately limited)	0.50
99000: Pits-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99003: Miscellaneous water-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 9b.--Forest Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50000: Adco-----	Slightly limited: slope/erodibility (slightly limited)	0.11	Slightly limited: slope/erodibility (slightly limited)	0.02	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.25	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.25	Not limited	
50001: Armstrong----	Limited: slope/erodibility (limited)	0.78	Slightly limited: slope/erodibility (slightly limited)	0.17	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.20	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited) slope (slightly limited)	0.50 0.20 0.15	Not limited	
50002: Keswick-----	Limited: slope/erodibility (limited)	0.67	Slightly limited: slope/erodibility (slightly limited)	0.15	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.20	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20	Not limited	
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50003: Mexico-----	Slightly limited: slope/erodibility (slightly limited)	0.11	Slightly limited: slope/erodibility (slightly limited)	0.02	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.25	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.25	Not limited	
50004: Mexico-----	Slightly limited: slope/erodibility (slightly limited)	0.11	Slightly limited: slope/erodibility (slightly limited)	0.02	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.25	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.25	Slightly limited: droughty (slightly limited)	0.23

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50005: Mexico-----	Slightly limited: slope/erodibility (slightly limited)	0.11	Slightly limited: slope/erodibility (slightly limited)	0.02	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.25	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.25	Not limited	
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50006: Vanmeter-----	Limited: slope/erodibility (limited)	0.89	Slightly limited: slope/erodibility (slightly limited)	0.16	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited) slope (moderately limited)	0.50 0.30	Not limited	
50007: Vanmeter-----	Very limited: slope/erodibility (very limited)	1.00	Moderately limited: slope/erodibility (moderately limited)	0.53	Limited: low strength (limited)	0.80	Very limited: slope (very limited) stickiness (surface) (moderately limited) low strength (moderately limited)	1.00 0.50 0.50	Not limited	
50008: Keswick-----	Limited: slope/erodibility (limited)	0.67	Slightly limited: slope/erodibility (slightly limited)	0.15	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.20	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20	Not limited	
50009: Keswick-----	Very limited: slope/erodibility (very limited)	1.00	Slightly limited: slope/erodibility (slightly limited)	0.29	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.20	Limited: slope (limited) low strength (moderately limited) seasonal wetness (slightly limited)	0.76 0.50 0.20	Not limited	
50010: Winnegan-----	Very limited: slope/erodibility (very limited)	1.00	Moderately limited: slope/erodibility (moderately limited)	0.49	Limited: low strength (limited)	0.80	Very limited: slope (very limited) low strength (moderately limited)	1.00 0.50	Not limited	

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50011: Winnegan-----	Very limited: slope/erodibility (very limited)	1.00	Limited: slope/erodibility (limited)	0.71	Limited: low strength (limited)	0.80	Very limited: slope (very limited) low strength (moderately limited)	1.00 0.50	Not limited	
50012: Putnam-----	Slightly limited: slope/erodibility (slightly limited)	0.11	Slightly limited: slope/erodibility (slightly limited)	0.02	Limited: low strength (limited) seasonal wetness (moderately limited)	0.80 0.60	Moderately limited: seasonal wetness (moderately limited) low strength (moderately limited)	0.60 0.50	Moderately limited: seasonal wetness (moderately limited)	0.60
60003: Menfro-----	Very limited: slope/erodibility (very limited)	1.00	Slightly limited: slope/erodibility (slightly limited)	0.27	Limited: low strength (limited)	0.80	Limited: slope (limited) low strength (moderately limited)	0.68 0.50	Not limited	
60008: Menfro-----	Very limited: slope/erodibility (very limited)	1.00	Limited: slope/erodibility (limited)	0.78	Limited: low strength (limited)	0.80	Very limited: slope (very limited) low strength (moderately limited)	1.00 0.50	Not limited	
60009: Clinkenbeard--	Very limited: slope/erodibility (very limited)	1.00	Limited: slope/erodibility (limited)	0.90	Not limited		Very limited: slope (very limited) stickiness (surface) (moderately limited) large surface stones (slightly limited)	1.00 0.50 0.01	Moderately limited: droughty (moderately limited)	0.49
Gasconade-----	Very limited: slope/erodibility (very limited)	1.00	Very limited: slope/erodibility (very limited)	1.00	Not limited		Very limited: slope (very limited) stickiness (surface) (moderately limited) large surface stones (slightly limited)	1.00 0.50 0.01	Very limited: droughty (very limited)	1.00
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60010: Arisburg-----	Slightly limited: slope/erodibility (slightly limited)	0.22	Slightly limited: slope/erodibility (slightly limited)	0.05	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.20	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20	Not limited	
60011: Arisburg-----	Limited: slope/erodibility (limited)	0.67	Slightly limited: slope/erodibility (slightly limited)	0.15	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.20	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.20	Not limited	
60012: Bardley-----	Very limited: slope/erodibility (very limited)	1.00	Moderately limited: slope/erodibility (moderately limited)	0.59	Limited: low strength (limited)	0.80	Very limited: slope (very limited) low strength (moderately limited)	1.00 0.50	Not limited	
Clinkenbeard--	Very limited: slope/erodibility (very limited)	1.00	Limited: slope/erodibility (limited)	0.88	Not limited		Very limited: slope (very limited) stickiness (surface) (moderately limited)	1.00 0.50	Slightly limited: droughty (slightly limited)	0.29
60019: Hatton-----	Moderately limited: slope/erodibility (moderately limited)	0.44	Slightly limited: slope/erodibility (slightly limited)	0.10	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.10	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.10	Not limited	
60020: Lenzburg-----	Moderately limited: slope/erodibility (moderately limited)	0.56	Slightly limited: slope/erodibility (slightly limited)	0.10	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited) stickiness (surface) (moderately limited)	0.50 0.50	Not limited	
60021: Lenzburg-----	Very limited: slope/erodibility (very limited)	1.00	Very limited: slope/erodibility (very limited)	1.00	Not limited		Very limited: slope (very limited) stickiness (surface) (moderately limited)	1.00 0.50	Not limited	

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60022: Leonard-----	Moderately limited: slope/erodibility (moderately limited)	0.33	Slightly limited: slope/erodibility (slightly limited)	0.07	Limited: low strength (limited) seasonal wetness (moderately limited)	0.80 0.45	Moderately limited: low strength (moderately limited) stickiness (surface) (moderately limited) seasonal wetness (moderately limited)	0.50 0.50 0.45	Moderately limited: seasonal wetness (moderately limited)	0.30
60023: Marion-----	Slightly limited: slope/erodibility (slightly limited)	0.22	Slightly limited: slope/erodibility (slightly limited)	0.05	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.29	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.29	Not limited	
60024: Menfro-----	Moderately limited: slope/erodibility (moderately limited)	0.44	Slightly limited: slope/erodibility (slightly limited)	0.10	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Not limited	
60025: Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
Harvester-----	Slightly limited: slope/erodibility (slightly limited)	0.22	Slightly limited: slope/erodibility (slightly limited)	0.05	Limited: low strength (limited)	0.80	Moderately limited: stickiness (surface) (moderately limited) low strength (moderately limited)	0.50 0.50	Not limited	
60026: Weller-----	Slightly limited: slope/erodibility (slightly limited)	0.22	Slightly limited: slope/erodibility (slightly limited)	0.05	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Moderately limited: droughty (moderately limited)	0.45
60027: Weller-----	Slightly limited: slope/erodibility (slightly limited)	0.22	Slightly limited: slope/erodibility (slightly limited)	0.05	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Not limited	
60028: Weller-----	Limited: slope/erodibility (limited)	0.67	Slightly limited: slope/erodibility (slightly limited)	0.15	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Not limited	

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60029: Weller-----	Limited: slope/erodibility (limited)	0.67	Slightly limited: slope/erodibility (slightly limited)	0.15	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Not limited	
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60030: Winfield-----	Limited: slope/erodibility (limited)	0.89	Slightly limited: slope/erodibility (slightly limited)	0.20	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.10	Moderately limited: low strength (moderately limited) slope (moderately limited) seasonal wetness (slightly limited)	0.50 0.30 0.10	Not limited	
60031: Winfield-----	Very limited: slope/erodibility (very limited)	1.00	Slightly limited: slope/erodibility (slightly limited)	0.27	Limited: low strength (limited)	0.80	Limited: slope (limited) low strength (moderately limited)	0.68 0.50	Not limited	
60032: Winfield-----	Very limited: slope/erodibility (very limited)	1.00	Limited: slope/erodibility (limited)	0.85	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.16	Very limited: slope (very limited) low strength (moderately limited) seasonal wetness (slightly limited)	1.00 0.50 0.16	Not limited	
60033: Wrengart-----	Limited: slope/erodibility (limited)	0.67	Slightly limited: slope/erodibility (slightly limited)	0.15	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Not limited	
60034: Wrengart-----	Very limited: slope/erodibility (very limited)	1.00	Slightly limited: slope/erodibility (slightly limited)	0.24	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.20	Moderately limited: slope (moderately limited) low strength (moderately limited) seasonal wetness (slightly limited)	0.60 0.50 0.20	Not limited	

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60035: Wrengart-----	Very limited: slope/erodibility (very limited)	1.00	Slightly limited: slope/erodibility (slightly limited)	0.24	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.20	Moderately limited: slope (moderately limited) low strength (moderately limited) seasonal wetness (slightly limited)	0.60 0.50 0.20	Not limited	
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60036: Menfro-----	Very limited: slope/erodibility (very limited)	1.00	Moderately limited: slope/erodibility (moderately limited)	0.39	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Not limited	
60037: Wrengart-----	Very limited: slope/erodibility (very limited)	1.00	Slightly limited: slope/erodibility (slightly limited)	0.29	Limited: low strength (limited)	0.80	Limited: slope (limited) low strength (moderately limited)	0.76 0.50	Not limited	
60038: Rocheport-----	Very limited: slope/erodibility (very limited)	1.00	Moderately limited: slope/erodibility (moderately limited)	0.41	Limited: low strength (limited)	0.80	Very limited: slope (very limited) low strength (moderately limited)	1.00 0.50	Not limited	
Bonnefemme----	Very limited: slope/erodibility (very limited)	1.00	Moderately limited: slope/erodibility (moderately limited)	0.54	Limited: low strength (limited)	0.80	Very limited: slope (very limited) low strength (moderately limited)	1.00 0.50	Not limited	
60039: Rocheport-----	Very limited: slope/erodibility (very limited)	1.00	Limited: slope/erodibility (limited)	0.80	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.10	Very limited: slope (very limited) low strength (moderately limited) seasonal wetness (slightly limited)	1.00 0.50 0.10	Not limited	

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60039: Bonnefemme----	Very limited: slope/erodibility (very limited)	1.00	Limited: slope/erodibility (limited)	0.78	Limited: low strength (limited)	0.80	Very limited: slope (very limited) low strength (moderately limited)	1.00 0.50	Not limited	
64002: Freeburg-----	Slightly limited: slope/erodibility (slightly limited)	0.22	Slightly limited: slope/erodibility (slightly limited)	0.05	Limited: low strength (limited) seasonal wetness (moderately limited)	0.80 0.56	Moderately limited: seasonal wetness (moderately limited) low strength (moderately limited)	0.56 0.50	Moderately limited: seasonal wetness (moderately limited)	0.51
64004: Auxvasse-----	Slightly limited: slope/erodibility (slightly limited)	0.22	Slightly limited: slope/erodibility (slightly limited)	0.05	Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.29	Moderately limited: low strength (moderately limited) seasonal wetness (slightly limited)	0.50 0.29	Not limited	
64005: Moniteau-----	Not limited		Not limited		Limited: seasonal wetness (limited) low strength (limited)	0.91 0.80	Limited: seasonal wetness (limited) flooding (moderately limited) low strength (moderately limited)	0.91 0.60 0.50	Limited: seasonal wetness (limited) flooding (moderately limited)	0.91 0.60
64006: Tanglenook----	Moderately limited: slope/erodibility (moderately limited)	0.33	Slightly limited: slope/erodibility (slightly limited)	0.07	Limited: low strength (limited) seasonal wetness (limited)	0.80 0.76	Limited: seasonal wetness (limited) low strength (moderately limited)	0.76 0.50	Limited: seasonal wetness (limited)	0.76
66007: Leta-----	Not limited		Not limited		Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.20	Limited: stickiness (surface) (limited) flooding (moderately limited) low strength (moderately limited)	0.75 0.60 0.50	Moderately limited: flooding (moderately limited)	0.60

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66014: Haymond-----	Not limited		Not limited		Limited: low strength (limited)	0.80	Very limited: flooding (very limited) low strength (moderately limited)	1.00 0.50	Limited: flooding (limited)	0.90
66015: Blake-----	Not limited		Not limited		Limited: low strength (limited)	0.80	Moderately limited: flooding (moderately limited) low strength (moderately limited)	0.60 0.50	Moderately limited: flooding (moderately limited)	0.60
66016: Blake-----	Not limited		Not limited		Limited: low strength (limited)	0.80	Very limited: flooding (very limited) low strength (moderately limited)	1.00 0.50	Limited: flooding (limited)	0.90
66017: Cedargap-----	Not limited		Not limited		Limited: low strength (limited)	0.80	Very limited: flooding (very limited) low strength (moderately limited)	1.00 0.50	Limited: flooding (limited)	0.90
Dameron-----	Not limited		Not limited		Limited: low strength (limited)	0.80	Very limited: flooding (very limited) low strength (moderately limited)	1.00 0.50	Limited: flooding (limited)	0.90
66018: Darwin-----	Not limited		Not limited		Limited: low strength (limited) seasonal wetness (limited)	0.80 0.76	Limited: seasonal wetness (limited) flooding (moderately limited) stickiness (surface) (moderately limited)	0.76 0.60 0.50	Limited: seasonal wetness (limited) flooding (moderately limited)	0.76 0.60

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66019: Haynie-----	Not limited		Not limited		Limited: low strength (limited)	0.80	Moderately limited: flooding (moderately limited) low strength (moderately limited)	0.60 0.50	Moderately limited: flooding (moderately limited)	0.60
66020: Haynie-----	Not limited		Not limited		Limited: low strength (limited)	0.80	Very limited: flooding (very limited) low strength (moderately limited)	1.00 0.50	Limited: flooding (limited) soil reaction (slightly limited)	0.90 0.01
66021: Perche-----	Not limited		Not limited		Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.20	Very limited: flooding (very limited) low strength (moderately limited) seasonal wetness (slightly limited)	1.00 0.50 0.20	Limited: flooding (limited)	0.90
66022: Sandover-----	Slightly limited: slope/erodibility (slightly limited)	0.06	Slightly limited: slope/erodibility (slightly limited)	0.02	Slightly limited: seasonal wetness (slightly limited)	0.10	Moderately limited: flooding (moderately limited) very sandy (surface) (moderately limited) seasonal wetness (slightly limited)	0.60 0.50 0.10	Moderately limited: flooding (moderately limited)	0.60
66023: Sarpy-----	Slightly limited: slope/erodibility (slightly limited)	0.06	Slightly limited: slope/erodibility (slightly limited)	0.02	Moderately limited: low strength (moderately limited)	0.50	Moderately limited: flooding (moderately limited) very sandy (surface) (moderately limited)	0.60 0.50	Limited: droughty (limited) flooding (moderately limited)	0.67 0.60
66024: Wilbur-----	Not limited		Not limited		Limited: low strength (limited) seasonal wetness (slightly limited)	0.80 0.20	Very limited: flooding (very limited) low strength (moderately limited) seasonal wetness (slightly limited)	1.00 0.50 0.20	Limited: flooding (limited)	0.90

Table 9b.--Forest Management--Continued

Map symbol and soil name	Erosion on roads and trails		Off-road or off-trail erosion		Soil rutting		Log landings		Seedling survival	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66025: Jemerson-----	Slightly limited: slope/erodibility (slightly limited)	0.22	Slightly limited: slope/erodibility (slightly limited)	0.05	Limited: low strength (limited)	0.80	Moderately limited: low strength (moderately limited)	0.50	Not limited	
99000: Pits-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99003: Miscellaneous water-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 10.--Windbreaks and Environmental Plantings

(Absence of an entry indicates that trees generally do not grow to the given height.)

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
50000: Adco-----	Fragrant sumac, ninebark.	Gray dogwood, possumhaw, Amur maple.	Eastern redcedar----	Austrian pine, Norway spruce, common hackberry, honeylocust, pin oak.	---
50001: Armstrong-----	Fragrant sumac, ninebark.	Gray dogwood, possumhaw, Amur maple.	Eastern redcedar----	Austrian pine, Norway spruce, common hackberry, honeylocust, pin oak.	---
50002: Keswick-----	Fragrant sumac, ninebark.	Gray dogwood, possumhaw, Amur maple.	Eastern redcedar----	Austrian pine, Norway spruce, common hackberry, honeylocust, pin oak.	---
Urban land.					
50003, 50004: Mexico-----	Fragrant sumac, ninebark.	Gray dogwood, possumhaw, Amur maple.	Eastern redcedar----	Austrian pine, Norway spruce, common hackberry, honeylocust, pin oak.	---
50005: Mexico-----	Fragrant sumac, ninebark.	Gray dogwood, possumhaw, Amur maple.	Eastern redcedar----	Austrian pine, Norway spruce, common hackberry, honeylocust, pin oak.	---
Urban land.					
50006, 50007: Vanmeter-----	Fragrant sumac-----	Washington hawthorn, eastern redbud, wahoo.	Virginia pine, persimmon, eastern redcedar, green ash.	Eastern cottonwood	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
50008, 50009: Keswick-----	Fragrant sumac, ninebark.	Gray dogwood, possumhaw, Amur maple.	Eastern redcedar----	Austrian pine, Norway spruce, common hackberry, honeylocust, pin oak.	---
50010, 50011: Winnegan-----	Fragrant sumac, ninebark.	Gray dogwood, possumhaw, Amur maple.	Eastern redcedar----	Austrian pine, Norway spruce, common hackberry, honeylocust, pin oak.	---
50012: Putnam-----	Buttonbush-----	Possumhaw-----	Nannyberry, arborvitae, eastern redcedar.	Common hackberry, baldcypress, pin oak.	Eastern cottonwood.
60003, 60008: Menfro-----	Fragrant sumac-----	American plum, southern arrowwood, gray dogwood.	Washington hawthorn, eastern redbud, eastern redcedar.	Tuliptree, northern red oak, green ash, white fir.	Eastern white pine.
60009: Clinkenbeard-----	American plum, common lilac, fragrant sumac.	Washington hawthorn, gray dogwood, Amur maple.	Austrian pine, Virginia pine, common hackberry, eastern redcedar, honeylocust.	---	---
Gasconade.					
Rock outcrop.					
60010, 60011: Arisburg-----	Buttonbush-----	Possumhaw-----	Nannyberry, arborvitae, eastern redcedar.	Common hackberry, baldcypress, pin oak.	Eastern cottonwood.
60012: Bardley-----	American plum, common lilac, fragrant sumac.	Washington hawthorn, gray dogwood, Amur maple.	Austrian pine, Virginia pine, common hackberry, eastern redcedar, honeylocust.	---	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
60012: Clinkenbeard-----	American plum, common lilac, fragrant sumac.	Washington hawthorn, gray dogwood, Amur maple.	Austrian pine, Virginia pine, common hackberry, eastern redcedar, honeylocust.	---	---
60019: Hatton-----	Fragrant sumac, ninebark.	Gray dogwood, possumhaw, Amur maple.	Eastern redcedar----	Austrian pine, Norway spruce, common hackberry, honeylocust, pin oak.	---
60020, 60021: Lenzburg-----	Fragrant sumac-----	Washington hawthorn, eastern redbud, wahoo.	Virginia pine, persimmon, eastern redcedar, green ash.	Eastern cottonwood	---
60022: Leonard-----	Fragrant sumac, ninebark.	Gray dogwood, possumhaw, Amur maple.	Eastern redcedar----	Austrian pine, Norway spruce, common hackberry, honeylocust, pin oak.	---
60023: Marion-----	Fragrant sumac, ninebark.	Gray dogwood, possumhaw, Amur maple.	Eastern redcedar----	Austrian pine, Norway spruce, common hackberry, honeylocust, pin oak.	---
60024: Menfro-----	Fragrant sumac-----	American plum, gray dogwood, southern arrowwood.	Washington hawthorn, eastern redbud, eastern redcedar.	White fir, green ash, northern red oak, tuliptree.	Eastern white pine.
60025: Urban land.					
Harvester-----	Fragrant sumac-----	American plum, gray dogwood, southern arrowwood.	Washington hawthorn, eastern redbud, eastern redcedar.	White fir, green ash, northern red oak, tuliptree.	Eastern white pine.
60026, 60027, 60028: Weller-----	Fragrant sumac, ninebark.	Gray dogwood, possumhaw, Amur maple.	Eastern redcedar----	Austrian pine, Norway spruce, common hackberry, honeylocust, pin oak.	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
60029: Weller-----	Fragrant sumac, ninebark.	Gray dogwood, possumhaw, Amur maple.	Eastern redcedar----	Austrian pine, Norway spruce, common hackberry, honeylocust, pin oak.	---
Urban land.					
60030, 60031, 60032: Winfield-----	Fragrant sumac-----	American plum, gray dogwood, southern arrowwood.	Washington hawthorn, eastern redbud, eastern redcedar.	White fir, green ash, northern red oak, tuliptree.	Eastern white pine.
60033, 60034: Wrengart-----	Fragrant sumac-----	American plum, gray dogwood, southern arrowwood.	Washington hawthorn, eastern redbud, eastern redcedar.	White fir, green ash, northern red oak, tuliptree.	Eastern white pine.
60035: Wrengart-----	Fragrant sumac-----	American plum, gray dogwood, southern arrowwood.	Washington hawthorn, eastern redbud, eastern redcedar.	White fir, green ash, northern red oak, tuliptree.	Eastern white pine.
Urban land.					
60036: Menfro-----	Fragrant sumac-----	American plum, southern arrowwood, gray dogwood.	Washington hawthorn, eastern redbud, eastern redcedar.	Northern red oak, green ash, tuliptree, white fir.	Eastern white pine.
60037: Wrengart-----	Fragrant sumac-----	American plum, gray dogwood, southern arrowwood.	Washington hawthorn, eastern redbud, eastern redcedar.	White fir, green ash, northern red oak, tuliptree.	Eastern white pine.
60038, 60039: Rocheport-----	Fragrant sumac, ninebark.	Gray dogwood, possumhaw, Amur maple.	Eastern redcedar----	Austrian pine, Norway spruce, common hackberry, honeylocust, pin oak.	---
Bonnefemme-----	Fragrant sumac, ninebark.	Gray dogwood, possumhaw, Amur maple.	Eastern redcedar----	Austrian pine, Norway spruce, common hackberry, honeylocust, pin oak.	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
64002: Freeburg-----	American plum, fragrant sumac.	Blackhaw, gray dogwood.	Washington hawthorn, nannyberry, eastern redcedar.	Baldcypress, green ash, sweetgum.	Eastern white pine, pin oak.
64004: Auxvasse-----	American plum, fragrant sumac.	Blackhaw, gray dogwood.	Washington hawthorn, nannyberry, eastern redcedar.	Baldcypress, green ash, sweetgum.	Eastern white pine, pin oak.
64005: Moniteau-----	Buttonbush-----	Possumhaw-----	Nannyberry, arborvitae, eastern redcedar.	Common hackberry, baldcypress, pin oak.	Eastern cottonwood.
64006: Tanglenook-----	Buttonbush-----	Possumhaw-----	Nannyberry, arborvitae, eastern redcedar.	Common hackberry, baldcypress, pin oak.	Eastern cottonwood.
66007: Leta-----	American plum, fragrant sumac.	Blackhaw, gray dogwood.	Washington hawthorn, nannyberry, eastern redcedar.	Baldcypress, green ash, sweetgum.	Eastern white pine, pin oak.
66014: Haymond-----	Fragrant sumac, American plum.	Blackhaw, gray dogwood.	Nannyberry, Washington hawthorn, eastern redcedar.	Sweetgum, green ash, white fir.	Pin oak, eastern white pine.
66015, 66016: Blake-----	American plum, blackhaw.	Possumhaw-----	Washington hawthorn, arborvitae, nannyberry, white spruce, eastern redcedar.	Bur oak, common hackberry, green ash.	---
66017: Cedargap-----	American plum, blackhaw.	Possumhaw-----	Washington hawthorn, arborvitae, nannyberry, white spruce, eastern redcedar.	Bur oak, common hackberry, green ash.	---
Dameron-----	American plum, blackhaw.	Possumhaw-----	Washington hawthorn, arborvitae, nannyberry, white spruce, eastern redcedar.	Bur oak, common hackberry, green ash.	---

Table 10.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
66018: Darwin-----	Buttonbush-----	Possumhaw-----	Nannyberry, arborvitae, eastern redcedar.	Common hackberry, baldcypress, pin oak.	Eastern cottonwood.
66019, 66020: Haynie-----	American plum-----	American holly, common chokecherry.	Washington hawthorn, nannyberry, eastern redcedar.	Bur oak, white fir, white spruce.	Green ash, eastern cottonwood.
66021: Perche-----	Fragrant sumac-----	Silky dogwood, American plum, gray dogwood.	Washington hawthorn, nannyberry.	Sweetgum, green ash, white fir, Norway spruce.	Eastern white pine, pin oak.
66022: Sandover-----	Fragrant sumac-----	Silky dogwood, American plum, gray dogwood.	Washington hawthorn, nannyberry.	Sweetgum, green ash, white fir, Norway spruce.	Eastern white pine, pin oak.
66023: Sarpy-----	American plum, common lilac, fragrant sumac, gray dogwood.	Washington hawthorn	Blackjack oak, persimmon, eastern redcedar, jack pine.	Eastern cottonwood	---
66024: Wilbur-----	Fragrant sumac, American plum.	Blackhaw, gray dogwood.	Nannyberry, Washington hawthorn, eastern redcedar.	Sweetgum, green ash, white fir.	Pin oak, eastern white pine.
66025: Jemerson-----	Silky dogwood-----	American cranberrybush.	Washington hawthorn, blue spruce, white fir.	Austrian pine, Norway spruce, eastern white pine.	Pin oak.

Table 11.--Recreational Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50000: Adco-----	Limited: wetness (limited)	0.80	Moderately limited: wetness (moderately limited)	0.45	Limited: wetness (limited)	0.80	Moderately limited: wetness (moderately limited)	0.45
50001: Armstrong-----	Limited: wetness (limited) percs slowly (moderately limited)	0.60 0.39	Moderately limited: percs slowly (moderately limited) wetness (slightly limited)	0.39 0.28	Very limited: slope (very limited) wetness (limited) percs slowly (moderately limited)	1.00 0.60 0.39	Slightly limited: wetness (slightly limited)	0.28
50002: Keswick-----	Limited: wetness (limited) percs slowly (moderately limited)	0.60 0.39	Moderately limited: percs slowly (moderately limited) wetness (slightly limited)	0.39 0.28	Limited: slope (limited) wetness (limited) percs slowly (moderately limited)	0.98 0.60 0.39	Slightly limited: wetness (slightly limited)	0.28
Urban land-----	Not rated		Not rated		Not rated		Not rated	
50003: Mexico-----	Limited: wetness (limited) percs slowly (slightly limited)	0.80 0.13	Moderately limited: wetness (moderately limited) percs slowly (slightly limited)	0.45 0.13	Limited: wetness (limited) percs slowly (slightly limited)	0.80 0.13	Moderately limited: wetness (moderately limited)	0.45
50004: Mexico-----	Limited: wetness (limited)	0.80	Moderately limited: wetness (moderately limited)	0.45	Limited: wetness (limited)	0.80	Moderately limited: wetness (moderately limited)	0.45

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50005: Mexico-----	Limited: wetness (limited) percs slowly (slightly limited)	0.80 0.13	Moderately limited: wetness (moderately limited) percs slowly (slightly limited)	0.45 0.13	Limited: wetness (limited) percs slowly (slightly limited)	0.80 0.13	Moderately limited: wetness (moderately limited)	0.45
Urban land-----	Not rated		Not rated		Not rated		Not rated	
50006: Vanmeter-----	Very limited: percs slowly (very limited) too clayey (moderately limited)	1.00 0.60	Very limited: percs slowly (very limited) too clayey (moderately limited)	1.00 0.60	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (limited)	1.00 1.00 0.76	Moderately limited: too clayey (moderately limited)	0.60
50007: Vanmeter-----	Very limited: percs slowly (very limited) slope (very limited) too clayey (very limited)	1.00 1.00 1.00	Very limited: percs slowly (very limited) slope (very limited) too clayey (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) percs slowly (very limited) too clayey (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) too clayey (very limited)	1.00 1.00
50008: Keswick-----	Limited: wetness (limited) percs slowly (moderately limited)	0.60 0.39	Moderately limited: percs slowly (moderately limited) wetness (slightly limited)	0.39 0.28	Limited: slope (limited) wetness (limited) percs slowly (moderately limited)	0.98 0.60 0.39	Slightly limited: wetness (slightly limited)	0.28
50009: Keswick-----	Limited: slope (limited) wetness (limited) percs slowly (moderately limited)	0.63 0.60 0.39	Limited: slope (limited) percs slowly (moderately limited) wetness (slightly limited)	0.63 0.39 0.28	Very limited: slope (very limited) wetness (limited) percs slowly (moderately limited)	1.00 0.60 0.39	Very limited: erodes easily (very limited) wetness (slightly limited)	1.00 0.28

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50010: Winnegan-----	Very limited: slope (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: slope (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: slope (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: erodes easily (very limited) slope (moderately limited)	1.00 0.50
50011: Winnegan-----	Very limited: slope (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: slope (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: slope (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: slope (very limited)	1.00
50012: Putnam-----	Very limited: wetness (very limited)	1.00	Limited: wetness (limited)	0.99	Very limited: wetness (very limited)	1.00	Limited: wetness (limited)	0.99
60003: Menfro-----	Moderately limited: slope (moderately limited)	0.37	Moderately limited: slope (moderately limited)	0.37	Very limited: slope (very limited)	1.00	Very limited: erodes easily (very limited)	1.00
60008: Menfro-----	Very limited: slope (very limited)	1.00	Very limited: slope (very limited)	1.00	Very limited: slope (very limited)	1.00	Very limited: erodes easily (very limited) slope (very limited)	1.00 1.00
60009: Clinkenbeard-----	Very limited: slope (very limited) large surface stones (limited) large stones (limited)	1.00 0.99 0.60	Very limited: slope (very limited) large surface stones (limited) large stones (limited)	1.00 0.99 0.60	Very limited: large stones >25% (very limited) slope (very limited) depth to bedrock (limited)	1.00 1.00 0.66	Very limited: slope (very limited) large surface stones (limited) large stones (limited)	1.00 0.99 0.60
Gasconade-----	Very limited: slope (very limited) large surface stones (limited) shallow to bedrock (limited)	1.00 0.99 0.90	Very limited: slope (very limited) large surface stones (limited) shallow to bedrock (limited)	1.00 0.99 0.90	Very limited: large stones >25% (very limited) slope (very limited) bedrock <20 in. (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) large surface stones (limited) large stones (limited)	1.00 0.99 0.60

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60009: Rock outcrop-----	Not rated		Not rated		Not rated		Not rated	
60010: Arisburg-----	Limited: wetness (limited) percs slowly (slightly limited)	0.60 0.13	Slightly limited: wetness (slightly limited) percs slowly (slightly limited)	0.28 0.13	Limited: wetness (limited) percs slowly (slightly limited)	0.60 0.13	Slightly limited: wetness (slightly limited)	0.28
60011: Arisburg-----	Limited: wetness (limited) percs slowly (slightly limited)	0.60 0.13	Slightly limited: wetness (slightly limited) percs slowly (slightly limited)	0.28 0.13	Limited: slope (limited) wetness (limited) percs slowly (slightly limited)	0.98 0.60 0.13	Slightly limited: wetness (slightly limited)	0.28
60012: Bardley-----	Very limited: slope (very limited) large surface stones (limited) large stones (slightly limited)	1.00 0.79 0.03	Very limited: slope (very limited) large surface stones (limited) large stones (slightly limited)	1.00 0.79 0.03	Very limited: slope (very limited) large stones (limited) depth to bedrock (slightly limited)	1.00 0.99 0.13	Very limited: slope (very limited) large surface stones (limited) large stones (slightly limited)	1.00 0.79 0.03
Clinkenbeard-----	Very limited: slope (very limited) too clayey (very limited) large surface stones (limited)	1.00 1.00 0.79	Very limited: slope (very limited) too clayey (very limited) large surface stones (limited)	1.00 1.00 0.79	Very limited: large stones >25% (very limited) slope (very limited) too clayey (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) too clayey (very limited) large surface stones (limited)	1.00 1.00 0.79
60019: Hatton-----	Very limited: percs slowly (very limited)	1.00	Very limited: percs slowly (very limited)	1.00	Very limited: percs slowly (very limited) slope (moderately limited)	1.00 0.40	Not limited	

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60020: Lenzburg-----	Moderately limited: too clayey (moderately limited) percs slowly (slightly limited)	0.60 0.13	Moderately limited: too clayey (moderately limited) percs slowly (slightly limited)	0.60 0.13	Limited: slope (limited) too clayey (moderately limited) percs slowly (slightly limited)	0.78 0.60 0.13	Moderately limited: too clayey (moderately limited)	0.60
60021: Lenzburg-----	Very limited: slope (very limited) too clayey (moderately limited) percs slowly (slightly limited)	1.00 0.60 0.13	Very limited: slope (very limited) too clayey (moderately limited) percs slowly (slightly limited)	1.00 0.60 0.13	Very limited: slope (very limited) small stones (limited) too clayey (moderately limited)	1.00 1.00 0.60	Very limited: slope (very limited) too clayey (moderately limited)	1.00 0.60
60022: Leonard-----	Very limited: wetness (very limited) percs slowly (moderately limited)	1.00 0.39	Limited: wetness (limited) percs slowly (moderately limited)	0.81 0.39	Very limited: wetness (very limited) percs slowly (moderately limited) slope (slightly limited)	1.00 0.39 0.10	Limited: wetness (limited)	0.81
60023: Marion-----	Limited: wetness (limited) too acid (slightly limited)	0.97 0.18	Limited: wetness (limited) too acid (slightly limited)	0.60 0.18	Limited: wetness (limited) too acid (slightly limited)	0.97 0.18	Limited: wetness (limited)	0.60
60024: Menfro-----	Not limited		Not limited		Moderately limited: slope (moderately limited)	0.40	Not limited	
60025: Urban land-----	Not rated		Not rated		Not rated		Not rated	
Harvester-----	Moderately limited: too clayey (moderately limited) percs slowly (slightly limited)	0.60 0.13	Moderately limited: too clayey (moderately limited) percs slowly (slightly limited)	0.60 0.13	Moderately limited: too clayey (moderately limited) percs slowly (slightly limited)	0.60 0.13	Moderately limited: too clayey (moderately limited)	0.60

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60026: Weller-----	Not limited		Not limited		Not limited		Not limited	
60027: Weller-----	Not limited		Not limited		Not limited		Not limited	
60028: Weller-----	Not limited		Not limited		Limited: slope (limited)	0.98	Not limited	
60029: Weller-----	Not limited		Not limited		Limited: slope (limited)	0.98	Not limited	
Urban land-----	Not rated		Not rated		Not rated		Not rated	
60030: Winfield-----	Not limited		Not limited		Very limited: slope (very limited)	1.00	Not limited	
60031: Winfield-----	Moderately limited: slope (moderately limited)	0.37	Moderately limited: slope (moderately limited)	0.37	Very limited: slope (very limited)	1.00	Very limited: erodes easily (very limited)	1.00
60032: Winfield-----	Very limited: slope (very limited) wetness (moderately limited)	1.00 0.46	Very limited: slope (very limited) wetness (slightly limited)	1.00 0.19	Very limited: slope (very limited) wetness (moderately limited)	1.00 0.46	Very limited: erodes easily (very limited) slope (very limited) wetness (slightly limited)	1.00 1.00 0.19
60033: Wrengart-----	Not limited		Not limited		Limited: slope (limited)	0.98	Not limited	

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60034: Wrengart-----	Limited: wetness (limited) slope (slightly limited)	0.60 0.16	Slightly limited: wetness (slightly limited) slope (slightly limited)	0.28 0.16	Very limited: slope (very limited) wetness (limited)	1.00 0.60	Very limited: erodes easily (very limited) wetness (slightly limited)	1.00 0.28
60035: Wrengart-----	Limited: wetness (limited) slope (slightly limited)	0.60 0.16	Slightly limited: wetness (slightly limited) slope (slightly limited)	0.28 0.16	Very limited: slope (very limited) wetness (limited)	1.00 0.60	Very limited: erodes easily (very limited) wetness (slightly limited)	1.00 0.28
Urban land-----	Not rated		Not rated		Not rated		Not rated	
60036: Menfro-----	Very limited: slope (very limited)	1.00	Very limited: slope (very limited)	1.00	Very limited: slope (very limited)	1.00	Very limited: erodes easily (very limited) slope (slightly limited)	1.00 0.17
60037: Wrengart-----	Limited: slope (limited)	0.63	Limited: slope (limited)	0.63	Very limited: slope (very limited)	1.00	Very limited: erodes easily (very limited)	1.00
60038: Rocheport-----	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.13	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.13	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.13	Very limited: erodes easily (very limited) slope (slightly limited)	1.00 0.25
Bonnefemme-----	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.17	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.17	Very limited: slope (very limited) depth to bedrock (moderately limited) percs slowly (slightly limited)	1.00 0.42 0.17	Very limited: erodes easily (very limited) slope (limited)	1.00 0.67

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60039: Rocheport-----	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.18	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.18	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.18	Very limited: erodes easily (very limited) slope (very limited)	1.00 1.00
Bonnefemme-----	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.13	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.13	Very limited: slope (very limited) percs slowly (slightly limited) depth to bedrock (slightly limited)	1.00 0.13 0.03	Very limited: slope (very limited)	1.00
64002: Freeburg-----	Very limited: wetness (very limited) percs slowly (slightly limited)	1.00 0.13	Limited: wetness (limited) percs slowly (slightly limited)	0.94 0.13	Very limited: wetness (very limited) percs slowly (slightly limited)	1.00 0.13	Limited: wetness (limited)	0.94
64004: Auxvasse-----	Limited: wetness (limited) flooding (rare) (limited)	0.97 0.90	Limited: wetness (limited)	0.60	Limited: wetness (limited)	0.97	Limited: wetness (limited)	0.60
64005: Moniteau-----	Very limited: flooding (very limited) wetness (very limited) percs slowly (slightly limited)	1.00 1.00 0.13	Very limited: wetness (very limited) percs slowly (slightly limited)	1.00 0.13	Very limited: wetness (very limited) flooding (moderately limited) percs slowly (slightly limited)	1.00 0.60 0.13	Very limited: wetness (very limited)	1.00
64006: Tanglenook-----	Very limited: wetness (very limited) flooding (rare) (limited) percs slowly (moderately limited)	1.00 0.90 0.39	Very limited: wetness (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: wetness (very limited) percs slowly (moderately limited) slope (slightly limited)	1.00 0.39 0.10	Very limited: wetness (very limited)	1.00

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66007: Leta-----	Very limited: flooding (very limited) too clayey (very limited) wetness (limited)	1.00 1.00 0.60	Very limited: too clayey (very limited) percs slowly (moderately limited) wetness (slightly limited)	1.00 0.39 0.28	Very limited: too clayey (very limited) wetness (limited) flooding (moderately limited)	1.00 0.60 0.60	Very limited: too clayey (very limited) wetness (slightly limited)	1.00 0.28
66014: Haymond-----	Very limited: flooding (very limited)	1.00	Moderately limited: flooding (moderately limited)	0.60	Very limited: flooding (very limited)	1.00	Moderately limited: flooding (moderately limited)	0.60
66015: Blake-----	Very limited: flooding (very limited)	1.00	Not limited		Moderately limited: flooding (moderately limited)	0.60	Not limited	
66016: Blake-----	Very limited: flooding (very limited) too clayey (moderately limited)	1.00 0.60	Moderately limited: flooding (moderately limited) too clayey (moderately limited)	0.60 0.60	Very limited: flooding (very limited) too clayey (moderately limited)	1.00 0.60	Moderately limited: flooding (moderately limited) too clayey (moderately limited)	0.60 0.60
66017: Cedargap-----	Very limited: flooding (very limited)	1.00	Moderately limited: flooding (moderately limited)	0.60	Very limited: flooding (very limited) small stones (slightly limited)	1.00 0.01	Moderately limited: flooding (moderately limited)	0.60
Dameron-----	Very limited: flooding (very limited)	1.00	Moderately limited: flooding (moderately limited)	0.60	Very limited: flooding (very limited) large stones (slightly limited)	1.00 0.01	Moderately limited: flooding (moderately limited)	0.60
66018: Darwin-----	Very limited: flooding (very limited) percs slowly (very limited) wetness (very limited)	1.00 1.00 1.00	Very limited: percs slowly (very limited) wetness (very limited) too clayey (moderately limited)	1.00 1.00 0.60	Very limited: percs slowly (very limited) wetness (very limited) flooding (moderately limited)	1.00 1.00 0.60	Very limited: wetness (very limited) too clayey (moderately limited)	1.00 0.60

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66019: Haynie-----	Very limited: flooding (very limited)	1.00	Not limited		Moderately limited: flooding (moderately limited)	0.60	Not limited	
66020: Haynie-----	Very limited: flooding (very limited)	1.00	Moderately limited: flooding (moderately limited)	0.60	Very limited: flooding (very limited)	1.00	Moderately limited: flooding (moderately limited)	0.60
66021: Perche-----	Very limited: flooding (very limited) wetness (limited)	1.00 0.60	Moderately limited: flooding (moderately limited) wetness (slightly limited)	0.60 0.28	Very limited: flooding (very limited) wetness (limited)	1.00 0.60	Moderately limited: flooding (moderately limited) wetness (slightly limited)	0.60 0.28
66022: Sandover-----	Very limited: flooding (very limited) too sandy (very limited)	1.00 1.00	Very limited: too sandy (very limited)	1.00	Very limited: too sandy (very limited) flooding (moderately limited)	1.00 0.60	Very limited: too sandy (very limited)	1.00
66023: Sarpy-----	Very limited: flooding (very limited) too sandy (very limited)	1.00 1.00	Very limited: too sandy (very limited)	1.00	Very limited: too sandy (very limited) flooding (moderately limited)	1.00 0.60	Very limited: too sandy (very limited)	1.00
66024: Wilbur-----	Very limited: flooding (very limited) wetness (limited)	1.00 0.60	Moderately limited: flooding (moderately limited) wetness (slightly limited)	0.60 0.28	Very limited: flooding (very limited) wetness (limited)	1.00 0.60	Moderately limited: flooding (moderately limited) wetness (slightly limited)	0.60 0.28
66025: Jemerson-----	Limited: flooding (rare) (limited)	0.90	Not limited		Not limited		Not limited	
99000: Pits-----	Not rated		Not rated		Not rated		Not rated	

Table 11.--Recreational Site Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds		Paths and trails	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
99001: Water-----	Not rated		Not rated		Not rated		Not rated	
99003: Miscellaneous water	Not rated		Not rated		Not rated		Not rated	

Table 12a.--Wildlife Habitat

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50000: Adco-----	Very limited: droughty (very limited) wetness (moderately limited)	1.00 0.53	Moderately limited: wetness (moderately limited) droughty (slightly limited)	0.53 0.25	Moderately limited: wetness (moderately limited) droughty (slightly limited)	0.53 0.25	Moderately limited: wetness (moderately limited) droughty (slightly limited)	0.53 0.25	Limited: wetness (limited) droughty (slightly limited)	0.79 0.25
50001: Armstrong----	Limited: high erodibility (limited) wetness (moderately limited) percs slowly (moderately limited)	0.80 0.44 0.39	Limited: high erodibility (limited) wetness (moderately limited) percs slowly (moderately limited)	0.80 0.44 0.39	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.59
50002: Keswick-----	Limited: high erodibility (limited) wetness (moderately limited) percs slowly (moderately limited)	0.80 0.44 0.39	Limited: high erodibility (limited) wetness (moderately limited) percs slowly (moderately limited)	0.80 0.44 0.39	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.59
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50003: Mexico-----	Very limited: droughty (very limited) wetness (moderately limited) moderate erodibility (moderately limited)	1.00 0.53 0.50	Limited: droughty (limited) wetness (moderately limited) moderate erodibility (moderately limited)	0.79 0.53 0.50	Limited: droughty (limited) wetness (moderately limited)	0.79 0.53	Limited: droughty (limited) wetness (moderately limited)	0.79 0.53	Limited: wetness (limited) droughty (limited)	0.79 0.79

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50004: Mexico-----	Very limited: droughty (very limited) wetness (moderately limited) moderate erodibility (moderately limited)	1.00 0.53 0.50	Very limited: droughty (very limited) wetness (moderately limited) moderate erodibility (moderately limited)	1.00 0.53 0.50	Very limited: droughty (very limited) wetness (moderately limited)	1.00 0.53	Very limited: droughty (very limited) wetness (moderately limited)	1.00 0.53	Very limited: droughty (very limited) wetness (limited)	1.00 0.79
50005: Mexico-----	Very limited: droughty (very limited) wetness (moderately limited) moderate erodibility (moderately limited)	1.00 0.53 0.50	Limited: droughty (limited) wetness (moderately limited) moderate erodibility (moderately limited)	0.79 0.53 0.50	Limited: droughty (limited) wetness (moderately limited)	0.79 0.53	Limited: droughty (limited) wetness (moderately limited)	0.79 0.53	Limited: wetness (limited) droughty (limited)	0.79 0.79
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50006: Vanmeter-----	Very limited: droughty (very limited) percs slowly (very limited) high erodibility (limited)	1.00 1.00 0.80	Very limited: percs slowly (very limited) high erodibility (limited) depth to bedrock (limited)	1.00 0.80 0.76	Slightly limited: too clayey (slightly limited) droughty (slightly limited)	0.04 0.01	Limited: depth to bedrock (limited) too clayey (slightly limited) droughty (slightly limited)	0.76 0.04 0.01	Limited: depth to bedrock (limited) droughty (slightly limited)	0.76 0.01
50007: Vanmeter-----	Very limited: droughty (very limited) percs slowly (very limited) high erodibility (limited)	1.00 1.00 0.80	Very limited: percs slowly (very limited) high erodibility (limited) depth to bedrock (limited)	1.00 0.80 0.76	Moderately limited: too clayey (moderately limited) droughty (slightly limited)	0.49 0.28	Limited: depth to bedrock (limited) too clayey (moderately limited) droughty (slightly limited)	0.76 0.49 0.28	Limited: depth to bedrock (limited) droughty (slightly limited)	0.76 0.28
50008: Keswick-----	Limited: high erodibility (limited) wetness (moderately limited) percs slowly (moderately limited)	0.80 0.44 0.39	Limited: high erodibility (limited) wetness (moderately limited) percs slowly (moderately limited)	0.80 0.44 0.39	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.59

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50009: Keswick-----	Limited: high erodibility (limited) wetness (moderately limited) percs slowly (moderately limited)	0.80 0.44 0.39	Limited: high erodibility (limited) wetness (moderately limited) percs slowly (moderately limited)	0.80 0.44 0.39	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.59
50010: Winnegan-----	Limited: high erodibility (limited) percs slowly (moderately limited) slope (moderately limited)	0.80 0.39 0.30	Limited: high erodibility (limited) percs slowly (moderately limited) slope (moderately limited)	0.80 0.39 0.30	Slightly limited: wetness (slightly limited)	0.13	Slightly limited: wetness (slightly limited)	0.13	Moderately limited: wetness (moderately limited)	0.37
50011: Winnegan-----	Limited: high erodibility (limited) slope (limited) percs slowly (moderately limited)	0.80 0.76 0.39	Limited: high erodibility (limited) slope (limited) percs slowly (moderately limited)	0.80 0.76 0.39	Slightly limited: wetness (slightly limited)	0.13	Slightly limited: wetness (slightly limited)	0.13	Moderately limited: wetness (moderately limited)	0.37
50012: Putnam-----	Very limited: droughty (very limited) wetness (limited)	1.00 0.99	Limited: wetness (limited) droughty (limited)	0.99 0.67	Limited: wetness (limited) droughty (limited)	0.99 0.67	Limited: wetness (limited) droughty (limited)	0.99 0.67	Very limited: wetness (very limited) droughty (limited)	1.00 0.67
60003: Menfro-----	Limited: high erodibility (limited)	0.80	Limited: high erodibility (limited)	0.80	Not limited		Not limited		Not limited	
60008: Menfro-----	Limited: slope (limited) high erodibility (limited)	0.87 0.80	Limited: slope (limited) high erodibility (limited)	0.87 0.80	Not limited		Not limited		Not limited	

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60009:										
Clinkenbeard--	Very limited: droughty (very limited)	1.00	Very limited: droughty (very limited)	1.00	Very limited: droughty (very limited)	1.00	Very limited: droughty (very limited)	1.00	Very limited: droughty (very limited)	1.00
	slope (very limited)	1.00	slope (very limited)	1.00	large stones (limited)	0.60	depth to bedrock (limited)	0.66	depth to bedrock (limited)	0.66
	large stones >35% (very limited)	0.99	large stones >35% (very limited)	0.99	too clayey (slightly limited)	0.14	large stones (limited)	0.60	large stones (limited)	0.60
Gasconade----	Very limited: droughty (very limited)	1.00	Very limited: droughty (very limited)	1.00	Very limited: droughty (very limited)	1.00	Very limited: droughty (very limited)	1.00	Very limited: droughty (very limited)	1.00
	bedrock <20 in. (very limited)	1.00	bedrock <20 in. (very limited)	1.00	large stones (limited)	0.60	bedrock <20 in. (very limited)	1.00	bedrock <20 in. (very limited)	1.00
	slope (very limited)	1.00	slope (very limited)	1.00	too clayey (slightly limited)	0.14	large stones (limited)	0.60	large stones (limited)	0.60
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
60010:										
Arisburg-----	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.59
	percs slowly (slightly limited)	0.13	percs slowly (slightly limited)	0.13						
60011:										
Arisburg-----	Moderately limited: moderate erodibility (moderately limited)	0.50	Moderately limited: moderate erodibility (moderately limited)	0.50	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.59
	wetness (moderately limited)	0.44	wetness (moderately limited)	0.44						
	percs slowly (slightly limited)	0.13	percs slowly (slightly limited)	0.13						
60012:										
Bardley-----	Very limited: droughty (very limited)	1.00	Limited: high erodibility (limited)	0.80	Slightly limited: large stones (slightly limited)	0.03	Slightly limited: depth to bedrock (slightly limited)	0.13	Slightly limited: depth to bedrock (slightly limited)	0.13
	high erodibility (limited)	0.80	slope (limited)	0.79	droughty (slightly limited)	0.01	large stones (slightly limited)	0.03	large stones (slightly limited)	0.03
	slope (limited)	0.79	large stones (moderately limited)	0.30			droughty (slightly limited)	0.01	droughty (slightly limited)	0.01

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60012: Clinkenbeard--	Very limited: droughty (very limited) large stones >35% (very limited) slope (very limited)	1.00 1.00 1.00	Very limited: large stones >35% (very limited) slope (very limited) droughty (very limited)	1.00 1.00 1.00	Limited: droughty (very limited) large stones (limited) too clayey (moderately limited)	1.00 0.68 0.35	Limited: droughty (very limited) large stones (limited) depth to bedrock (moderately limited)	1.00 0.68 0.58	Limited: droughty (very limited) large stones (limited) depth to bedrock (moderately limited)	1.00 0.68 0.58
60019: Hatton-----	Very limited: percs slowly (very limited) moderate erodibility (moderately limited) wetness (slightly limited)	1.00 0.50 0.28	Very limited: percs slowly (very limited) moderate erodibility (moderately limited) wetness (slightly limited)	1.00 0.50 0.28	Slightly limited: wetness (slightly limited)	0.28	Slightly limited: wetness (slightly limited)	0.28	Moderately limited: wetness (moderately limited)	0.45
60020: Lenzburg-----	Limited: high erodibility (limited) too clayey (slightly limited) percs slowly (slightly limited)	0.80 0.26 0.13	Limited: high erodibility (limited) too clayey (slightly limited) percs slowly (slightly limited)	0.80 0.26 0.13	Slightly limited: too clayey (slightly limited)	0.26	Slightly limited: too clayey (slightly limited)	0.26	Not limited	
60021: Lenzburg-----	Very limited: slope (very limited) high erodibility (limited) percs slowly (slightly limited)	1.00 0.80 0.13	Very limited: slope (very limited) high erodibility (limited) percs slowly (slightly limited)	1.00 0.80 0.13	Slightly limited: too clayey (slightly limited) small stones (slightly limited)	0.12 0.01	Slightly limited: too clayey (slightly limited)	0.12	Not limited	
60022: Leonard-----	Limited: wetness (limited) moderate erodibility (moderately limited) percs slowly (moderately limited)	0.81 0.50 0.39	Limited: wetness (limited) moderate erodibility (moderately limited) percs slowly (moderately limited)	0.81 0.50 0.39	Limited: wetness (limited)	0.81	Limited: wetness (limited)	0.81	Very limited: wetness (very limited)	1.00

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60023: Marion-----	Very limited: droughty (very limited) wetness (moderately limited)	1.00 0.60	Limited: droughty (very limited) wetness (moderately limited)	0.99 0.60	Limited: droughty (very limited) wetness (moderately limited)	0.99 0.60	Limited: droughty (very limited) wetness (moderately limited)	0.99 0.60	Limited: droughty (very limited) wetness (limited)	0.99 0.99
60024: Menfro-----	Moderately limited: moderate erodibility (moderately limited)	0.50	Moderately limited: moderate erodibility (moderately limited)	0.50	Not limited		Not limited		Not limited	
60025: Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
Harvester-----	Moderately limited: moderate erodibility (moderately limited) too clayey (slightly limited) percs slowly (slightly limited)	0.50 0.16 0.13	Moderately limited: moderate erodibility (moderately limited) too clayey (slightly limited) percs slowly (slightly limited)	0.50 0.16 0.13	Slightly limited: too clayey (slightly limited)	0.16	Slightly limited: too clayey (slightly limited)	0.16	Not limited	
60026: Weller-----	Very limited: droughty (very limited) moderate erodibility (moderately limited)	1.00 0.50	Very limited: droughty (very limited) moderate erodibility (moderately limited)	1.00 0.50	Very limited: droughty (very limited)	1.00	Very limited: droughty (very limited)	1.00	Very limited: droughty (very limited) wetness (slightly limited)	1.00 0.29
60027: Weller-----	Very limited: droughty (very limited) moderate erodibility (moderately limited)	1.00 0.50	Limited: droughty (limited) moderate erodibility (moderately limited)	0.83 0.50	Limited: droughty (limited)	0.83	Limited: droughty (limited)	0.83	Limited: droughty (limited) wetness (slightly limited)	0.83 0.29
60028: Weller-----	Very limited: droughty (very limited) high erodibility (limited)	1.00 0.80	Limited: droughty (limited) high erodibility (limited)	0.87 0.80	Limited: droughty (limited)	0.87	Limited: droughty (limited)	0.87	Limited: droughty (limited) wetness (slightly limited)	0.87 0.29

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60029: Weller-----	Very limited: droughty (very limited) high erodibility (limited)	1.00 0.80	Limited: droughty (limited) high erodibility (limited)	0.87 0.80	Limited: droughty (limited)	0.87	Limited: droughty (limited)	0.87	Limited: droughty (limited) wetness (slightly limited)	0.87 0.29
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60030: Winfield-----	Limited: high erodibility (limited) wetness (slightly limited)	0.80 0.28	Limited: high erodibility (limited) wetness (slightly limited)	0.80 0.28	Slightly limited: wetness (slightly limited)	0.28	Slightly limited: wetness (slightly limited)	0.28	Moderately limited: wetness (moderately limited)	0.45
60031: Winfield-----	Limited: high erodibility (limited)	0.80	Limited: high erodibility (limited)	0.80	Not limited		Not limited		Slightly limited: wetness (slightly limited)	0.20
60032: Winfield-----	Limited: slope (limited) high erodibility (limited) wetness (moderately limited)	0.99 0.80 0.39	Limited: slope (limited) high erodibility (limited) wetness (moderately limited)	0.99 0.80 0.39	Moderately limited: wetness (moderately limited)	0.39	Moderately limited: wetness (moderately limited)	0.39	Moderately limited: wetness (moderately limited)	0.54
60033: Wrengart-----	Limited: high erodibility (limited) wetness (slightly limited)	0.80 0.13	Limited: high erodibility (limited) wetness (slightly limited)	0.80 0.13	Slightly limited: wetness (slightly limited)	0.13	Slightly limited: wetness (slightly limited)	0.13	Moderately limited: wetness (moderately limited)	0.37
60034: Wrengart-----	Limited: droughty (limited) high erodibility (limited) wetness (moderately limited)	0.80 0.80 0.44	Limited: high erodibility (limited) wetness (moderately limited)	0.80 0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.59

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60035: Wrengart-----	Limited: droughty (limited) high erodibility (limited) wetness (moderately limited)	0.80 0.80 0.44	Limited: high erodibility (limited) wetness (moderately limited)	0.80 0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.59
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60036: Menfro-----	Limited: high erodibility (limited) slope (slightly limited)	0.80 0.10	Limited: high erodibility (limited) slope (slightly limited)	0.80 0.10	Not limited		Not limited		Not limited	
60037: Wrengart-----	Limited: high erodibility (limited) wetness (slightly limited)	0.80 0.13	Limited: high erodibility (limited) wetness (slightly limited)	0.80 0.13	Slightly limited: wetness (slightly limited)	0.13	Slightly limited: wetness (slightly limited)	0.13	Moderately limited: wetness (moderately limited)	0.37
60038: Rocheport-----	Limited: high erodibility (limited) slope (slightly limited) percs slowly (slightly limited)	0.80 0.15 0.13	Limited: high erodibility (limited) slope (slightly limited) percs slowly (slightly limited)	0.80 0.15 0.13	Not limited		Not limited		Slightly limited: wetness (slightly limited)	0.22
Bonnefemme----	Limited: high erodibility (limited) droughty (limited) slope (moderately limited)	0.80 0.64 0.42	Limited: high erodibility (limited) slope (moderately limited) depth to bedrock (moderately limited)	0.80 0.42 0.42	Not limited		Moderately limited: depth to bedrock (moderately limited)	0.42	Moderately limited: depth to bedrock (moderately limited)	0.42

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60039: Rocheport-----	Limited: slope (limited) high erodibility (limited) wetness (slightly limited)	0.91 0.80 0.28	Limited: slope (limited) high erodibility (limited) wetness (slightly limited)	0.91 0.80 0.28	Slightly limited: wetness (slightly limited)	0.28	Slightly limited: wetness (slightly limited)	0.28	Moderately limited: wetness (moderately limited)	0.45
Bonnefemme----	Limited: slope (limited) high erodibility (limited) percs slowly (slightly limited)	0.87 0.80 0.13	Limited: slope (limited) high erodibility (limited) percs slowly (slightly limited)	0.87 0.80 0.13	Not limited		Slightly limited: depth to bedrock (slightly limited)	0.03	Slightly limited: depth to bedrock (slightly limited)	0.03
64002: Freeburg-----	Limited: wetness (limited) percs slowly (slightly limited)	0.94 0.13	Limited: wetness (limited) percs slowly (slightly limited)	0.94 0.13	Limited: wetness (limited)	0.94	Limited: wetness (limited)	0.94	Very limited: wetness (very limited)	1.00
64004: Auxvasse-----	Very limited: droughty (very limited) wetness (moderately limited)	1.00 0.60	Limited: droughty (limited) wetness (moderately limited)	0.62 0.60	Limited: droughty (limited) wetness (moderately limited)	0.62 0.60	Limited: droughty (limited) wetness (moderately limited)	0.62 0.60	Limited: wetness (limited) droughty (limited)	0.99 0.62
64005: Moniteau-----	Very limited: wetness (very limited) flooding (moderately limited) percs slowly (slightly limited)	1.00 0.60 0.13	Very limited: wetness (very limited) flooding (moderately limited) percs slowly (slightly limited)	1.00 0.60 0.13	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited)	1.00
64006: Tanglenook----	Very limited: wetness (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: wetness (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited)	1.00

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66007: Leta-----	Moderately limited: flooding (moderately limited) wetness (moderately limited) percs slowly (moderately limited)	0.60 0.44 0.39	Moderately limited: flooding (moderately limited) wetness (moderately limited) percs slowly (moderately limited)	0.60 0.44 0.39	Moderately limited: wetness (moderately limited) too clayey (moderately limited)	0.44 0.37	Moderately limited: wetness (moderately limited) too clayey (moderately limited)	0.44 0.37	Moderately limited: wetness (moderately limited)	0.59
66014: Haymond-----	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Not limited		Not limited		Not limited	
66015: Blake-----	Moderately limited: flooding (moderately limited)	0.60	Moderately limited: flooding (moderately limited)	0.60	Not limited		Not limited		Slightly limited: wetness (slightly limited)	0.29
66016: Blake-----	Limited: flooding (limited) too clayey (slightly limited)	0.90 0.05	Limited: flooding (limited) too clayey (slightly limited)	0.90 0.05	Slightly limited: too clayey (slightly limited)	0.05	Slightly limited: too clayey (slightly limited)	0.05	Slightly limited: wetness (slightly limited)	0.29
66017: Cedargap-----	Very limited: droughty (very limited) flooding (limited)	1.00 0.90	Limited: flooding (limited) droughty (slightly limited)	0.90 0.03	Slightly limited: droughty (slightly limited)	0.03	Slightly limited: droughty (slightly limited)	0.03	Slightly limited: droughty (slightly limited)	0.03
Dameron-----	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Not limited		Not limited		Not limited	
66018: Darwin-----	Very limited: percs slowly (very limited) wetness (very limited) flooding (moderately limited)	1.00 1.00 0.60	Very limited: percs slowly (very limited) wetness (very limited) flooding (moderately limited)	1.00 1.00 0.60	Very limited: wetness (very limited) too clayey (slightly limited)	1.00 0.16	Very limited: wetness (very limited) too clayey (slightly limited)	1.00 0.16	Very limited: wetness (very limited)	1.00

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66019: Haynie-----	Moderately limited: flooding (moderately limited)	0.60	Moderately limited: flooding (moderately limited)	0.60	Not limited		Not limited		Not limited	
66020: Haynie-----	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Slightly limited: flooding (prolonged) (slightly limited)	0.20	Slightly limited: flooding (prolonged) (slightly limited)	0.20	Slightly limited: flooding (prolonged) (slightly limited)	0.20
66021: Perche-----	Limited: flooding (limited) wetness (moderately limited)	0.90 0.44	Limited: flooding (limited) wetness (moderately limited)	0.90 0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.59
66022: Sandover-----	Very limited: too sandy (very limited) flooding (moderately limited) droughty (slightly limited)	1.00 0.60 0.29	Very limited: too sandy (very limited) flooding (moderately limited) wetness (slightly limited)	1.00 0.60 0.28	Very limited: too sandy (very limited) wetness (slightly limited)	1.00 0.28	Very limited: too sandy (very limited) wetness (slightly limited)	1.00 0.28	Moderately limited: wetness (moderately limited)	0.45
66023: Sarpy-----	Very limited: too sandy (very limited) droughty (very limited) flooding (moderately limited)	1.00 1.00 0.60	Very limited: too sandy (very limited) droughty (limited) flooding (moderately limited)	1.00 0.69 0.60	Very limited: too sandy (very limited) droughty (limited) flooding (prolonged) (slightly limited)	1.00 0.69 0.20	Very limited: too sandy (very limited) droughty (limited) flooding (prolonged) (slightly limited)	1.00 0.69 0.20	Limited: droughty (limited) flooding (prolonged) (slightly limited)	0.69 0.20
66024: Wilbur-----	Limited: flooding (limited) wetness (moderately limited)	0.90 0.44	Limited: flooding (limited) wetness (moderately limited)	0.90 0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.59
66025: Jemerson-----	Not limited		Not limited		Not limited		Not limited		Not limited	

Table 12a.--Wildlife Habitat--Continued

Map symbol and soil name	Grain and seed crops (for use as food and cover)		Domestic grasses and legumes (for use as food and cover)		Upland wild herbaceous plants		Upland shrubs and vines		Upland deciduous trees	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
99000: Pits-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99003: Miscellaneous water-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 12b.--Wildlife Habitat

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Upland mixed deciduous- conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50000: Adco-----	Limited: wetness (limited) droughty (slightly limited)	0.79 0.25	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.37	Slightly limited: droughty (slightly limited)	0.25	Moderately limited: deep to water (moderately limited)	0.37	Moderately limited: seepage (moderately limited)	0.45
50001: Armstrong----	Moderately limited: wetness (moderately limited)	0.59	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.45	Not limited		Moderately limited: deep to water (moderately limited)	0.45	Very limited: slope (very limited)	1.00
50002: Keswick-----	Moderately limited: wetness (moderately limited)	0.59	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.45	Not limited		Moderately limited: deep to water (moderately limited)	0.45	Limited: slope (limited)	0.91
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50003: Mexico-----	Limited: wetness (limited) droughty (limited)	0.79 0.79	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.37	Limited: droughty (limited)	0.79	Moderately limited: deep to water (moderately limited)	0.37	Slightly limited: seepage (slightly limited)	0.18
50004: Mexico-----	Very limited: droughty (very limited) wetness (limited)	1.00 0.79	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.37	Very limited: droughty (very limited)	1.00	Moderately limited: deep to water (moderately limited)	0.37	Moderately limited: seepage (moderately limited)	0.45

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous- conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50005: Mexico-----	Limited: wetness (limited) droughty (limited)	0.79 0.79	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.37	Limited: droughty (limited)	0.79	Moderately limited: deep to water (moderately limited)	0.37	Slightly limited: seepage (slightly limited)	0.18
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50006: Vanmeter-----	Limited: depth to bedrock (limited) droughty (slightly limited)	0.76 0.01	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Very limited: deep to water (very limited) droughty (slightly limited)	1.00 0.01	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited) slope (very limited)	1.00 1.00
50007: Vanmeter-----	Limited: depth to bedrock (limited) droughty (slightly limited)	0.76 0.28	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Very limited: deep to water (very limited) droughty (slightly limited)	1.00 0.28	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) deep to water (very limited)	1.00 1.00
50008: Keswick-----	Moderately limited: wetness (moderately limited)	0.59	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.45	Not limited		Moderately limited: deep to water (moderately limited)	0.45	Limited: slope (limited)	0.91
50009: Keswick-----	Moderately limited: wetness (moderately limited)	0.59	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.45	Not limited		Moderately limited: deep to water (moderately limited)	0.45	Very limited: slope (very limited)	1.00
50010: Winnegan-----	Moderately limited: wetness (moderately limited)	0.37	Limited: deep to water (limited) infrequent flooding (limited)	0.82 0.80	Not limited		Limited: deep to water (limited)	0.82	Very limited: slope (very limited)	1.00

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous-conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50011: Winnegan-----	Moderately limited: wetness (moderately limited)	0.37	Limited: deep to water (limited) infrequent flooding (limited)	0.82 0.80	Not limited		Limited: deep to water (limited)	0.82	Very limited: slope (very limited)	1.00
50012: Putnam-----	Very limited: wetness (very limited) droughty (limited)	1.00 0.67	Limited: infrequent flooding (limited) deep to water (slightly limited)	0.80 0.02	Limited: droughty (limited)	0.67	Slightly limited: deep to water (slightly limited)	0.02	Moderately limited: seepage (moderately limited)	0.45
60003: Menfro-----	Not limited		Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) deep to water (very limited) seepage (moderately limited)	1.00 1.00 0.45
60008: Menfro-----	Not limited		Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) deep to water (very limited) seepage (moderately limited)	1.00 1.00 0.45
60009: Clinkenbeard--	Very limited: droughty (very limited) depth to bedrock (limited) large stones (limited)	1.00 0.66 0.60	Very limited: deep to water (very limited) infrequent flooding (limited) large stones (limited)	1.00 0.80 0.60	Very limited: deep to water (very limited) droughty (very limited) large stones (limited)	1.00 1.00 0.60	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) deep to water (very limited) seepage (slightly limited)	1.00 1.00 0.10

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous-conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60009: Gasconade-----	Very limited: droughty (very limited) bedrock <20 in. (very limited) large stones (limited)	1.00 1.00 0.60	Very limited: deep to water (very limited) infrequent flooding (limited) large stones (limited)	1.00 0.80 0.60	Very limited: droughty (very limited) deep to water (very limited) large stones (limited)	1.00 1.00 0.60	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) deep to water (very limited) seepage (slightly limited)	1.00 1.00 0.18
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
60010: Arisburg-----	Moderately limited: wetness (moderately limited)	0.59	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.45	Not limited		Moderately limited: deep to water (moderately limited)	0.45	Slightly limited: seepage (slightly limited)	0.18
60011: Arisburg-----	Moderately limited: wetness (moderately limited)	0.59	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.45	Not limited		Moderately limited: deep to water (moderately limited)	0.45	Limited: slope (limited) seepage (slightly limited)	0.91 0.18
60012: Bardley-----	Slightly limited: depth to bedrock (slightly limited) large stones (slightly limited) droughty (slightly limited)	0.13 0.03 0.01	Very limited: deep to water (very limited) infrequent flooding (limited) large stones (slightly limited)	1.00 0.80 0.03	Very limited: deep to water (very limited) large stones (slightly limited) droughty (slightly limited)	1.00 0.03 0.01	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) deep to water (very limited) seepage (moderately limited)	1.00 1.00 0.45
Clinkenbeard--	Limited: droughty (very limited) large stones (limited) depth to bedrock (moderately limited)	1.00 0.68 0.58	Very limited: deep to water (very limited) infrequent flooding (limited) large stones (limited)	1.00 0.80 0.68	Very limited: deep to water (very limited) droughty (very limited) large stones (limited)	1.00 1.00 0.68	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) deep to water (very limited) seepage (slightly limited)	1.00 1.00 0.15
60019: Hatton-----	Moderately limited: wetness (moderately limited)	0.45	Limited: infrequent flooding (limited) deep to water (limited)	0.80 0.60	Not limited		Limited: deep to water (limited)	0.60	Moderately limited: slope (moderately limited)	0.31

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous-conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60020: Lenzburg-----	Not limited		Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited) slope (limited) seepage (slightly limited)	1.00 0.66 0.18
60021: Lenzburg-----	Not limited		Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) deep to water (very limited) seepage (slightly limited)	1.00 1.00 0.18
60022: Leonard-----	Very limited: wetness (very limited)	1.00	Limited: infrequent flooding (limited) deep to water (slightly limited)	0.80 0.15	Not limited		Slightly limited: deep to water (slightly limited)	0.15	Slightly limited: slope (slightly limited)	0.08
60023: Marion-----	Limited: droughty (very limited) wetness (limited)	0.99 0.99	Limited: infrequent flooding (limited) deep to water (slightly limited)	0.80 0.30	Limited: droughty (very limited)	0.99	Slightly limited: deep to water (slightly limited)	0.30	Moderately limited: seepage (moderately limited)	0.45
60024: Menfro-----	Not limited		Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited) seepage (moderately limited) slope (moderately limited)	1.00 0.45 0.31
60025: Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous- conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60025: Harvester-----	Not limited		Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited) seepage (slightly limited)	1.00 0.18
60026: Weller-----	Very limited: droughty (very limited) wetness (slightly limited)	1.00 0.29	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Very limited: droughty (very limited) deep to water (slightly limited)	1.00 0.02	Very limited: deep to water (very limited)	1.00	Moderately limited: seepage (moderately limited) deep to water (slightly limited)	0.45 0.02
60027: Weller-----	Limited: droughty (limited) wetness (slightly limited)	0.83 0.29	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Limited: droughty (limited) deep to water (slightly limited)	0.83 0.02	Very limited: deep to water (very limited)	1.00	Moderately limited: seepage (moderately limited) deep to water (slightly limited)	0.45 0.02
60028: Weller-----	Limited: droughty (limited) wetness (slightly limited)	0.87 0.29	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Limited: droughty (limited) deep to water (slightly limited)	0.87 0.02	Very limited: deep to water (very limited)	1.00	Limited: slope (limited) seepage (moderately limited) deep to water (slightly limited)	0.91 0.45 0.02
60029: Weller-----	Limited: droughty (limited) wetness (slightly limited)	0.87 0.29	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Limited: droughty (limited) deep to water (slightly limited)	0.87 0.02	Very limited: deep to water (very limited)	1.00	Limited: slope (limited) seepage (moderately limited) deep to water (slightly limited)	0.91 0.45 0.02
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60030: Winfield-----	Moderately limited: wetness (moderately limited)	0.45	Limited: infrequent flooding (limited) deep to water (limited)	0.80 0.60	Not limited		Limited: deep to water (limited)	0.60	Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous-conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60031: Winfield-----	Slightly limited: wetness (slightly limited)	0.20	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Slightly limited: deep to water (slightly limited)	0.11	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) seepage (moderately limited) deep to water (slightly limited)	1.00 0.45 0.11
60032: Winfield-----	Moderately limited: wetness (moderately limited)	0.54	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.50	Not limited		Moderately limited: deep to water (moderately limited)	0.50	Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45
60033: Wrengart-----	Moderately limited: wetness (moderately limited)	0.37	Limited: deep to water (limited) infrequent flooding (limited)	0.82 0.80	Not limited		Limited: deep to water (limited)	0.82	Limited: slope (limited) seepage (moderately limited)	0.91 0.45
60034: Wrengart-----	Moderately limited: wetness (moderately limited)	0.59	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.45	Not limited		Moderately limited: deep to water (moderately limited)	0.45	Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45
60035: Wrengart-----	Moderately limited: wetness (moderately limited)	0.59	Limited: infrequent flooding (limited) deep to water (moderately limited)	0.80 0.45	Not limited		Moderately limited: deep to water (moderately limited)	0.45	Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60036: Menfro-----	Not limited		Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) deep to water (very limited) seepage (moderately limited)	1.00 1.00 0.45

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous-conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60037: Wrengart-----	Moderately limited: wetness (moderately limited)	0.37	Limited: deep to water (limited) infrequent flooding (limited)	0.82 0.80	Not limited		Limited: deep to water (limited)	0.82	Very limited: slope (very limited) seepage (moderately limited)	1.00 0.45
60038: Rocheport-----	Slightly limited: wetness (slightly limited)	0.22	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Slightly limited: deep to water (slightly limited)	0.08	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) seepage (slightly limited) deep to water (slightly limited)	1.00 0.18 0.08
Bonnefemme----	Moderately limited: depth to bedrock (moderately limited)	0.42	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) deep to water (very limited) seepage (slightly limited)	1.00 1.00 0.15
60039: Rocheport-----	Moderately limited: wetness (moderately limited)	0.45	Limited: infrequent flooding (limited) deep to water (limited)	0.80 0.60	Not limited		Limited: deep to water (limited)	0.60	Very limited: slope (very limited) seepage (slightly limited)	1.00 0.14
Bonnefemme----	Slightly limited: depth to bedrock (slightly limited)	0.03	Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited)	1.00	Very limited: slope (very limited) deep to water (very limited) seepage (slightly limited)	1.00 1.00 0.18
64002: Freeburg-----	Very limited: wetness (very limited)	1.00	Limited: infrequent flooding (limited) deep to water (slightly limited)	0.80 0.06	Not limited		Slightly limited: deep to water (slightly limited)	0.06	Slightly limited: seepage (slightly limited)	0.18

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous-conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
64004: Auxvasse-----	Limited: wetness (limited) droughty (limited)	0.99 0.62	Limited: infrequent flooding (limited) deep to water (slightly limited)	0.80 0.30	Limited: droughty (limited)	0.62	Slightly limited: deep to water (slightly limited)	0.30	Moderately limited: seepage (moderately limited)	0.45
64005: Moniteau-----	Very limited: wetness (very limited)	1.00	Moderately limited: infrequent flooding (moderately limited)	0.50	Not limited		Not limited		Slightly limited: seepage (slightly limited)	0.18
64006: Tanglenook----	Very limited: wetness (very limited)	1.00	Limited: infrequent flooding (limited)	0.80	Not limited		Not limited		Slightly limited: slope (slightly limited)	0.08
66007: Leta-----	Moderately limited: wetness (moderately limited)	0.59	Moderately limited: infrequent flooding (moderately limited) deep to water (moderately limited)	0.50 0.45	Not limited		Moderately limited: deep to water (moderately limited)	0.45	Not limited	
66014: Haymond-----	Not limited		Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited) seepage (moderately limited)	1.00 0.45
66015: Blake-----	Slightly limited: wetness (slightly limited)	0.29	Very limited: deep to water (very limited) infrequent flooding (moderately limited)	1.00 0.50	Slightly limited: deep to water (slightly limited)	0.02	Very limited: deep to water (very limited)	1.00	Moderately limited: seepage (moderately limited) deep to water (slightly limited)	0.45 0.02
66016: Blake-----	Slightly limited: wetness (slightly limited)	0.29	Very limited: deep to water (very limited) infrequent flooding (moderately limited)	1.00 0.50	Slightly limited: deep to water (slightly limited)	0.02	Very limited: deep to water (very limited)	1.00	Moderately limited: seepage (moderately limited) deep to water (slightly limited)	0.45 0.02

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous- conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66017: Cedargap-----	Slightly limited: droughty (slightly limited)	0.03	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited) droughty (slightly limited)	1.00 0.03	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited) seepage (moderately limited)	1.00 0.45
Dameron-----	Not limited		Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited) seepage (moderately limited)	1.00 0.45
66018: Darwin-----	Very limited: wetness (very limited)	1.00	Moderately limited: infrequent flooding (moderately limited)	0.50	Not limited		Not limited		Not limited	
66019: Haynie-----	Not limited		Very limited: deep to water (very limited) infrequent flooding (moderately limited)	1.00 0.50	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited)	1.00	Very limited: deep to water (very limited) seepage (moderately limited)	1.00 0.45
66020: Haynie-----	Slightly limited: flooding (prolonged) (slightly limited)	0.20	Very limited: deep to water (very limited) flooding (prolonged) (slightly limited)	1.00 0.20	Very limited: deep to water (very limited) flooding (prolonged) (slightly limited)	1.00 0.20	Very limited: deep to water (very limited) soil reaction (slightly limited)	1.00 0.01	Very limited: deep to water (very limited) seepage (moderately limited) soil reaction (slightly limited)	1.00 0.45 0.01
66021: Perche-----	Moderately limited: wetness (moderately limited)	0.59	Moderately limited: deep to water (moderately limited)	0.45	Not limited		Moderately limited: deep to water (moderately limited)	0.45	Moderately limited: seepage (moderately limited)	0.45
66022: Sandover-----	Moderately limited: wetness (moderately limited)	0.45	Very limited: too sandy (very limited) deep to water (limited) infrequent flooding (moderately limited)	1.00 0.60 0.50	Not limited		Very limited: too sandy (very limited) deep to water (limited)	1.00 0.60	Very limited: too sandy (very limited) seepage (moderately limited)	1.00 0.45

Table 12b.--Wildlife Habitat--Continued

Map symbol and soil name	Upland mixed deciduous- conifer trees		Riparian herbaceous plants		Riparian shrubs, vines, and trees		Freshwater wetland plants		Irrigated freshwater wetland plants	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66023: Sarpy-----	Limited: droughty (limited) flooding (prolonged) (slightly limited)	0.69 0.20	Very limited: too sandy (very limited) deep to water (very limited) infrequent flooding (moderately limited)	1.00 1.00 0.50	Very limited: deep to water (very limited) droughty (limited) flooding (prolonged) (slightly limited)	1.00 0.69 0.20	Very limited: deep to water (very limited) too sandy (very limited)	1.00 1.00	Very limited: too sandy (very limited) deep to water (very limited) seepage (very limited)	1.00 1.00 1.00
66024: Wilbur-----	Moderately limited: wetness (moderately limited)	0.59	Moderately limited: deep to water (moderately limited)	0.45	Not limited		Moderately limited: deep to water (moderately limited)	0.45	Moderately limited: seepage (moderately limited)	0.45
66025: Jemerson-----	Not limited		Very limited: deep to water (very limited) infrequent flooding (limited)	1.00 0.80	Moderately limited: deep to water (moderately limited)	0.47	Very limited: deep to water (very limited)	1.00	Moderately limited: deep to water (moderately limited) seepage (moderately limited)	0.47 0.45
99000: Pits-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99003: Miscellaneous water-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 13.--Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50000: Adco-----	Moderately limited: wetness (moderately limited)	0.45	Very limited: wetness (very limited)	1.00	Moderately limited: wetness (moderately limited)	0.45	Very limited: low strength (very limited) wetness (moderately limited)	1.00 0.45	Moderately limited: wetness (moderately limited) droughty (slightly limited)	0.45 0.25
50001: Armstrong----	Very limited: shrink-swell (very limited) wetness (slightly limited) slope (slightly limited)	1.00 0.28 0.15	Very limited: wetness (very limited) shrink-swell (limited) slope (slightly limited)	1.00 0.88 0.15	Very limited: shrink-swell (very limited) slope (limited) wetness (slightly limited)	1.00 0.83 0.28	Very limited: low strength (very limited) shrink-swell (very limited) wetness (slightly limited)	1.00 1.00 0.28	Slightly limited: wetness (slightly limited)	0.28
50002: Keswick-----	Moderately limited: shrink-swell (moderately limited) wetness (slightly limited)	0.45 0.28	Very limited: wetness (very limited) shrink-swell (limited)	1.00 0.65	Limited: slope (limited) shrink-swell (moderately limited) wetness (slightly limited)	0.68 0.45 0.28	Very limited: low strength (very limited) shrink-swell (moderately limited) wetness (slightly limited)	1.00 0.45 0.28	Slightly limited: wetness (slightly limited)	0.28
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50003: Mexico-----	Very limited: shrink-swell (very limited) wetness (moderately limited)	1.00 0.45	Very limited: wetness (very limited) shrink-swell (very limited)	1.00 1.00	Very limited: shrink-swell (very limited) wetness (moderately limited)	1.00 0.45	Very limited: low strength (very limited) shrink-swell (very limited) wetness (moderately limited)	1.00 1.00 0.45	Limited: droughty (limited) wetness (moderately limited)	0.79 0.45

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50004: Mexico-----	Very limited: shrink-swell (very limited) wetness (moderately limited)	1.00 0.45	Very limited: wetness (very limited) shrink-swell (very limited)	1.00 1.00	Very limited: shrink-swell (very limited) wetness (moderately limited)	1.00 0.45	Very limited: low strength (very limited) shrink-swell (very limited) wetness (moderately limited)	1.00 1.00 0.45	Very limited: droughty (very limited) wetness (moderately limited)	1.00 0.45
50005: Mexico-----	Very limited: shrink-swell (very limited) wetness (moderately limited)	1.00 0.45	Very limited: wetness (very limited) shrink-swell (very limited)	1.00 1.00	Very limited: shrink-swell (very limited) wetness (moderately limited)	1.00 0.45	Very limited: low strength (very limited) shrink-swell (very limited) wetness (moderately limited)	1.00 1.00 0.45	Limited: droughty (limited) wetness (moderately limited)	0.79 0.45
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50006: Vanmeter-----	Very limited: shrink-swell (very limited) hard bedrock (moderately limited) slope (moderately limited)	1.00 0.39 0.30	Very limited: hard bedrock <40" (very limited) shrink-swell (very limited) soft bedrock (limited)	1.00 1.00 0.95	Very limited: shrink-swell (very limited) slope (limited) depth to bedrock (moderately limited)	1.00 0.99 0.39	Very limited: low strength (very limited) shrink-swell (very limited) depth to bedrock (moderately limited)	1.00 1.00 0.39	Limited: depth to bedrock (limited) too clayey (moderately limited) droughty (slightly limited)	0.76 0.60 0.01
50007: Vanmeter-----	Very limited: shrink-swell (very limited) slope (very limited)	1.00 1.00	Very limited: shrink-swell (very limited) slope (very limited) soft bedrock (limited)	1.00 1.00 0.95	Very limited: slope (very limited) shrink-swell (very limited)	1.00 1.00	Very limited: low strength (very limited) slope (very limited) shrink-swell (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) too clayey (very limited) depth to bedrock (limited)	1.00 1.00 0.76
50008: Keswick-----	Moderately limited: shrink-swell (moderately limited) wetness (slightly limited)	0.45 0.28	Very limited: wetness (very limited) shrink-swell (limited)	1.00 0.65	Limited: slope (limited) shrink-swell (moderately limited) wetness (slightly limited)	0.68 0.45 0.28	Very limited: low strength (very limited) shrink-swell (moderately limited) wetness (slightly limited)	1.00 0.45 0.28	Slightly limited: wetness (slightly limited)	0.28

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50009: Keswick-----	Very limited: shrink-swell (very limited) slope (limited) wetness (slightly limited)	1.00 0.76 0.28	Very limited: wetness (very limited) shrink-swell (very limited) slope (limited)	1.00 1.00 0.76	Very limited: slope (very limited) shrink-swell (very limited) wetness (slightly limited)	1.00 1.00 0.28	Very limited: low strength (very limited) shrink-swell (very limited) slope (limited)	1.00 1.00 0.63	Limited: slope (limited) wetness (slightly limited)	0.63 0.28
50010: Winnegan-----	Very limited: shrink-swell (very limited) slope (very limited)	1.00 1.00	Very limited: shrink-swell (very limited) slope (very limited) wetness (limited)	1.00 1.00 0.99	Very limited: slope (very limited) shrink-swell (very limited)	1.00 1.00	Very limited: low strength (very limited) slope (very limited) shrink-swell (very limited)	1.00 1.00 1.00	Very limited: slope (very limited)	1.00
50011: Winnegan-----	Very limited: slope (very limited) shrink-swell (very limited)	1.00 1.00	Very limited: slope (very limited) shrink-swell (very limited) wetness (limited)	1.00 1.00 0.99	Very limited: slope (very limited) shrink-swell (very limited)	1.00 1.00	Very limited: low strength (very limited) slope (very limited) shrink-swell (very limited)	1.00 1.00 1.00	Very limited: slope (very limited)	1.00
50012: Putnam-----	Limited: wetness (limited)	0.99	Very limited: wetness (very limited)	1.00	Limited: wetness (limited)	0.99	Very limited: low strength (very limited) wetness (limited)	1.00 0.99	Limited: wetness (limited) droughty (limited)	0.99 0.67
60003: Menfro-----	Limited: slope (limited) shrink-swell (moderately limited)	0.68 0.45	Limited: slope (limited) shrink-swell (slightly limited)	0.68 0.04	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: low strength (very limited) shrink-swell (moderately limited) slope (moderately limited)	1.00 0.45 0.37	Moderately limited: slope (moderately limited)	0.37

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60008: Menfro-----	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: slope (very limited) shrink-swell (slightly limited)	1.00 0.10	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: low strength (very limited) slope (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: slope (very limited)	1.00
60009: Clinkenbeard--	Very limited: slope (very limited) large stones (very limited) shrink-swell (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) hard bedrock <40" (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) large stones (very limited) shrink-swell (very limited)	1.00 1.00 1.00	Very limited: low strength (very limited) slope (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: large stones >30% (very limited) slope (very limited) droughty (very limited)	1.00 1.00 1.00
Gasconade-----	Very limited: slope (very limited) large stones (very limited) hard bedrock <20" (very limited)	1.00 1.00 1.00	Very limited: hard bedrock <40" (very limited) slope (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) large stones (very limited) hard bedrock <20" (very limited)	1.00 1.00 1.00	Very limited: low strength (very limited) slope (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: large stones >30% (very limited) slope (very limited) droughty (very limited)	1.00 1.00 1.00
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
60010: Arisburg-----	Moderately limited: shrink-swell (moderately limited) wetness (slightly limited)	0.45 0.28	Very limited: wetness (very limited) shrink-swell (moderately limited)	1.00 0.52	Moderately limited: shrink-swell (moderately limited) wetness (slightly limited)	0.45 0.28	Very limited: low strength (very limited) shrink-swell (moderately limited) wetness (slightly limited)	1.00 0.45 0.28	Slightly limited: wetness (slightly limited)	0.28
60011: Arisburg-----	Very limited: shrink-swell (very limited) wetness (slightly limited)	1.00 0.28	Very limited: wetness (very limited) shrink-swell (very limited)	1.00 1.00	Very limited: shrink-swell (very limited) slope (limited) wetness (slightly limited)	1.00 0.68 0.28	Very limited: low strength (very limited) shrink-swell (very limited) wetness (slightly limited)	1.00 1.00 0.28	Slightly limited: wetness (slightly limited)	0.28

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60012: Bardley-----	Very limited: slope (very limited) shrink-swell (moderately limited) large stones (moderately limited)	1.00 0.45 0.35	Very limited: slope (very limited) hard bedrock <40" (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: slope (very limited) shrink-swell (moderately limited) large stones (moderately limited)	1.00 0.45 0.35	Very limited: slope (very limited) low strength (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: slope (very limited) large stones (limited) depth to bedrock (slightly limited)	1.00 0.79 0.13
Clinkenbeard--	Very limited: slope (very limited) large stones (very limited) shrink-swell (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) hard bedrock <40" (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) large stones (very limited) shrink-swell (very limited)	1.00 1.00 1.00	Very limited: low strength (very limited) slope (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: large stones >30% (very limited) slope (very limited) too clayey (very limited)	1.00 1.00 1.00
60019: Hatton-----	Moderately limited: shrink-swell (moderately limited)	0.45	Very limited: wetness (very limited) shrink-swell (moderately limited)	1.00 0.45	Moderately limited: shrink-swell (moderately limited) slope (slightly limited)	0.45 0.15	Very limited: low strength (very limited) shrink-swell (moderately limited)	1.00 0.45	Not limited	
60020: Lenzburg-----	Very limited: shrink-swell (very limited)	1.00	Very limited: shrink-swell (very limited)	1.00	Very limited: shrink-swell (very limited) slope (moderately limited)	1.00 0.45	Very limited: low strength (very limited) shrink-swell (very limited)	1.00 1.00	Moderately limited: too clayey (moderately limited)	0.60
60021: Lenzburg-----	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: slope (very limited) low strength (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: slope (very limited) too clayey (moderately limited) small stones (slightly limited)	1.00 0.60 0.06

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60022: Leonard-----	Very limited: shrink-swell (very limited) wetness (limited)	1.00 0.81	Very limited: wetness (very limited) shrink-swell (very limited)	1.00 1.00	Very limited: shrink-swell (very limited) wetness (limited)	1.00 0.81	Very limited: low strength (very limited) shrink-swell (very limited) wetness (limited)	1.00 1.00 0.81	Limited: wetness (limited)	0.81
60023: Marion-----	Limited: wetness (limited)	0.60	Very limited: wetness (very limited)	1.00	Limited: wetness (limited)	0.60	Very limited: low strength (very limited) wetness (limited)	1.00 0.60	Very limited: droughty (very limited) wetness (limited) too acid (moderately limited)	0.99 0.60 0.48
60024: Menfro-----	Moderately limited: shrink-swell (moderately limited)	0.45	Not limited		Moderately limited: shrink-swell (moderately limited) slope (slightly limited)	0.45 0.15	Very limited: low strength (very limited) shrink-swell (moderately limited)	1.00 0.45	Not limited	
60025: Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
Harvester-----	Moderately limited: shrink-swell (moderately limited)	0.45	Moderately limited: shrink-swell (moderately limited)	0.45	Moderately limited: shrink-swell (moderately limited)	0.45	Very limited: low strength (very limited) shrink-swell (moderately limited)	1.00 0.45	Moderately limited: too clayey (moderately limited) too acid (slightly limited)	0.60 0.24
60026: Weller-----	Very limited: shrink-swell (very limited)	1.00	Very limited: shrink-swell (very limited) wetness (limited)	1.00 0.95	Very limited: shrink-swell (very limited)	1.00	Very limited: low strength (very limited) shrink-swell (very limited)	1.00 1.00	Very limited: droughty (very limited)	1.00
60027: Weller-----	Not limited		Limited: wetness (limited)	0.95	Not limited		Very limited: low strength (very limited)	1.00	Limited: droughty (limited)	0.83

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60028: Weller-----	Not limited		Limited: wetness (limited)	0.95	Limited: slope (limited)	0.68	Very limited: low strength (very limited)	1.00	Limited: droughty (limited)	0.87
60029: Weller-----	Not limited		Limited: wetness (limited)	0.95	Limited: slope (limited)	0.68	Very limited: low strength (very limited)	1.00	Limited: droughty (limited)	0.87
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60030: Winfield-----	Moderately limited: shrink-swell (moderately limited) slope (moderately limited)	0.45 0.30	Very limited: wetness (very limited) slope (moderately limited) shrink-swell (slightly limited)	1.00 0.30 0.28	Limited: slope (limited) shrink-swell (moderately limited)	0.99 0.45	Very limited: low strength (very limited) shrink-swell (moderately limited)	1.00 0.45	Not limited	
60031: Winfield-----	Limited: slope (limited) shrink-swell (moderately limited)	0.68 0.45	Limited: wetness (limited) slope (limited) shrink-swell (slightly limited)	0.87 0.68 0.12	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: low strength (very limited) shrink-swell (moderately limited) slope (moderately limited)	1.00 0.45 0.37	Moderately limited: slope (moderately limited)	0.37
60032: Winfield-----	Very limited: slope (very limited) shrink-swell (moderately limited) wetness (slightly limited)	1.00 0.45 0.19	Very limited: wetness (very limited) slope (very limited) shrink-swell (moderately limited)	1.00 1.00 0.43	Very limited: slope (very limited) shrink-swell (moderately limited) wetness (slightly limited)	1.00 0.45 0.19	Very limited: slope (very limited) low strength (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: slope (very limited) wetness (slightly limited)	1.00 0.19
60033: Wrengart-----	Moderately limited: shrink-swell (moderately limited)	0.45	Limited: wetness (limited) shrink-swell (moderately limited)	0.99 0.41	Limited: slope (limited) shrink-swell (moderately limited)	0.68 0.45	Very limited: low strength (very limited) shrink-swell (moderately limited)	1.00 0.45	Not limited	

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60034: Wrengart-----	Moderately limited: slope (moderately limited) shrink-swell (moderately limited) wetness (slightly limited)	0.60 0.45 0.28	Very limited: wetness (very limited) slope (moderately limited) shrink-swell (moderately limited)	1.00 0.60 0.45	Very limited: slope (very limited) shrink-swell (moderately limited) wetness (slightly limited)	1.00 0.45 0.28	Very limited: low strength (very limited) shrink-swell (moderately limited) wetness (slightly limited)	1.00 0.45 0.28	Slightly limited: wetness (slightly limited) slope (slightly limited)	0.28 0.16
60035: Wrengart-----	Moderately limited: slope (moderately limited) shrink-swell (moderately limited) wetness (slightly limited)	0.60 0.45 0.28	Very limited: wetness (very limited) slope (moderately limited) shrink-swell (moderately limited)	1.00 0.60 0.45	Very limited: slope (very limited) shrink-swell (moderately limited) wetness (slightly limited)	1.00 0.45 0.28	Very limited: low strength (very limited) shrink-swell (moderately limited) wetness (slightly limited)	1.00 0.45 0.28	Slightly limited: wetness (slightly limited) slope (slightly limited)	0.28 0.16
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60036: Menfro-----	Moderately limited: shrink-swell (moderately limited)	0.45	Slightly limited: shrink-swell (slightly limited)	0.20	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: low strength (very limited) slope (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: slope (very limited)	1.00
60037: Wrengart-----	Limited: slope (limited) shrink-swell (moderately limited)	0.76 0.45	Limited: wetness (limited) slope (limited) shrink-swell (moderately limited)	0.99 0.76 0.34	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: low strength (very limited) slope (limited) shrink-swell (moderately limited)	1.00 0.63 0.45	Limited: slope (limited) too acid (slightly limited)	0.63 0.12
60038: Rocheport-----	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: slope (very limited) shrink-swell (limited) wetness (limited)	1.00 0.96 0.90	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: low strength (very limited) slope (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: slope (very limited)	1.00

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60038: Bonnefemme-----	Very limited: shrink-swell (very limited) slope (very limited) hard bedrock (moderately limited)	1.00 1.00 0.51	Very limited: hard bedrock <40" (very limited) shrink-swell (very limited) slope (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) shrink-swell (very limited) depth to bedrock (moderately limited)	1.00 1.00 0.51	Very limited: low strength (very limited) slope (very limited) shrink-swell (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) depth to bedrock (moderately limited)	1.00 0.42
60039: Rocheport-----	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: slope (very limited) wetness (very limited) depth to bedrock (limited)	1.00 1.00 0.75	Very limited: slope (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: low strength (very limited) slope (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: slope (very limited) too acid (slightly limited)	1.00 0.24
Bonnefemme-----	Very limited: slope (very limited) shrink-swell (moderately limited) hard bedrock (slightly limited)	1.00 0.45 0.07	Very limited: slope (very limited) hard bedrock <40" (very limited) shrink-swell (limited)	1.00 1.00 0.80	Very limited: slope (very limited) shrink-swell (moderately limited) depth to bedrock (slightly limited)	1.00 0.45 0.07	Very limited: low strength (very limited) slope (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: slope (very limited) depth to bedrock (slightly limited)	1.00 0.03
64002: Freeburg-----	Limited: wetness (limited) shrink-swell (moderately limited)	0.94 0.45	Very limited: wetness (very limited) shrink-swell (slightly limited)	1.00 0.30	Limited: wetness (limited) shrink-swell (moderately limited)	0.94 0.45	Very limited: low strength (very limited) wetness (limited) shrink-swell (moderately limited)	1.00 0.94 0.45	Limited: wetness (limited)	0.94
64004: Auxvasse-----	Very limited: flooding (very limited) wetness (limited)	1.00 0.60	Very limited: flooding (very limited) wetness (very limited)	1.00 1.00	Very limited: flooding (very limited) wetness (limited)	1.00 0.60	Very limited: low strength (very limited) flooding (rare) (limited) wetness (limited)	1.00 0.90 0.60	Limited: droughty (limited) wetness (limited)	0.62 0.60

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
64005: Moniteau-----	Very limited: wetness (very limited) flooding (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: flooding (very limited) wetness (very limited)	1.00 1.00	Very limited: flooding (very limited) wetness (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: low strength (very limited) wetness (very limited) flooding (very limited)	1.00 1.00 1.00	Very limited: wetness (very limited) flooding (moderately limited)	1.00 0.60
64006: Tanglenook----	Very limited: flooding (very limited) wetness (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: flooding (very limited) wetness (very limited) shrink-swell (moderately limited)	1.00 1.00 0.55	Very limited: flooding (very limited) wetness (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: low strength (very limited) wetness (very limited) flooding (rare) (limited)	1.00 1.00 0.90	Very limited: wetness (very limited)	1.00
66007: Leta-----	Very limited: flooding (very limited) shrink-swell (very limited) wetness (slightly limited)	1.00 1.00 0.28	Very limited: flooding (very limited) wetness (very limited) shrink-swell (slightly limited)	1.00 1.00 0.29	Very limited: flooding (very limited) shrink-swell (very limited) wetness (slightly limited)	1.00 1.00 0.28	Very limited: low strength (very limited) flooding (very limited) shrink-swell (very limited)	1.00 1.00 1.00	Very limited: too clayey (very limited) flooding (moderately limited) wetness (slightly limited)	1.00 0.60 0.28
66014: Haymond-----	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited) low strength (slightly limited)	1.00 0.22	Very limited: flooding (very limited)	1.00
66015: Blake-----	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: flooding (very limited) wetness (limited) shrink-swell (slightly limited)	1.00 0.95 0.12	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: flooding (very limited) low strength (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Moderately limited: flooding (moderately limited)	0.60

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66016: Blake-----	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: flooding (very limited) wetness (limited) shrink-swell (moderately limited)	1.00 0.95 0.45	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: flooding (very limited) low strength (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: flooding (very limited) too clayey (moderately limited)	1.00 0.60
66017: Cedargap-----	Very limited: flooding (very limited) large stones (slightly limited)	1.00 0.28	Very limited: flooding (very limited) large stones (slightly limited)	1.00 0.28	Very limited: flooding (very limited) large stones (slightly limited)	1.00 0.28	Very limited: flooding (very limited) large stones (slightly limited)	1.00 0.28	Very limited: flooding (very limited) droughty (slightly limited)	1.00 0.03
Dameron-----	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: flooding (very limited) large stones (slightly limited)	1.00 0.01
66018: Darwin-----	Very limited: shrink-swell (very limited) flooding (very limited) wetness (very limited)	1.00 1.00 1.00	Very limited: shrink-swell (very limited) flooding (very limited) wetness (very limited)	1.00 1.00 1.00	Very limited: flooding (very limited) shrink-swell (very limited) wetness (very limited)	1.00 1.00 1.00	Very limited: low strength (very limited) shrink-swell (very limited) flooding (very limited)	1.00 1.00 1.00	Very limited: wetness (very limited) flooding (moderately limited) too clayey (moderately limited)	1.00 0.60 0.60
66019: Haynie-----	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Moderately limited: flooding (moderately limited)	0.60
66020: Haynie-----	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66021: Perche-----	Very limited: flooding (very limited) wetness (slightly limited)	1.00 0.28	Very limited: flooding (very limited) wetness (very limited)	1.00 1.00	Very limited: flooding (very limited) wetness (slightly limited)	1.00 0.28	Very limited: flooding (very limited) wetness (slightly limited)	1.00 0.28	Very limited: flooding (very limited) wetness (slightly limited)	1.00 0.28
66022: Sandover-----	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: flooding (very limited) wetness (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Moderately limited: flooding (moderately limited) too sandy (moderately limited)	0.60 0.50
66023: Sarpy-----	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Limited: droughty (limited) flooding (moderately limited)	0.69 0.60
66024: Willbur-----	Very limited: flooding (very limited) wetness (slightly limited)	1.00 0.28	Very limited: flooding (very limited) wetness (very limited)	1.00 1.00	Very limited: flooding (very limited) wetness (slightly limited)	1.00 0.28	Very limited: flooding (very limited) wetness (slightly limited)	1.00 0.28	Very limited: flooding (very limited) wetness (slightly limited)	1.00 0.28
66025: Jemerson-----	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: flooding (very limited) wetness (moderately limited) shrink-swell (slightly limited)	1.00 0.47 0.12	Very limited: flooding (very limited) shrink-swell (moderately limited)	1.00 0.45	Very limited: low strength (very limited) flooding (rare) (limited) shrink-swell (moderately limited)	1.00 0.90 0.45	Not limited	
99000: Pits-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 13.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
99003: Miscellaneous water-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 14.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50000: Adco-----	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited) too clayey (limited) too acid (moderately limited)	1.00 0.99 0.54	Limited: wetness (limited)	0.90	Limited: too clayey (limited) hard to pack (limited) wetness (moderately limited)	0.98 0.70 0.55
50001: Armstrong----	Very limited: wetness (very limited) percs slowly (limited)	1.00 0.93	Very limited: wetness (very limited) slope (very limited)	1.00 1.00	Limited: wetness (limited) too clayey (limited)	0.99 0.68	Limited: wetness (limited)	0.80	Moderately limited: wetness (moderately limited) too clayey (moderately limited)	0.50 0.42
50002: Keswick-----	Very limited: wetness (very limited) percs slowly (limited)	1.00 0.71	Very limited: wetness (very limited) slope (limited)	1.00 0.91	Limited: wetness (limited) too clayey (limited) too acid (moderately limited)	0.99 0.69 0.36	Limited: wetness (limited)	0.80	Moderately limited: wetness (moderately limited) too clayey (moderately limited) too acid (moderately limited)	0.50 0.43 0.36
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50003: Mexico-----	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited) too clayey (limited) too acid (slightly limited)	1.00 0.83 0.06	Limited: wetness (limited)	0.90	Limited: hard to pack (limited) too clayey (limited) wetness (moderately limited)	0.70 0.66 0.55

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50004: Mexico-----	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited) too clayey (limited) too acid (slightly limited)	1.00 0.80 0.18	Limited: wetness (limited)	0.90	Limited: hard to pack (limited) too clayey (moderately limited) wetness (moderately limited)	0.70 0.59 0.55
50005: Mexico-----	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited) too clayey (limited) too acid (slightly limited)	1.00 0.83 0.06	Limited: wetness (limited)	0.90	Limited: hard to pack (limited) too clayey (limited) wetness (moderately limited)	0.70 0.66 0.55
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50006: Vanmeter-----	Very limited: depth to bedrock (very limited)	1.00	Very limited: depth to bedrock (very limited) slope (very limited)	1.00 1.00	Very limited: depth to bedrock (very limited) too clayey (limited)	1.00 0.65	Very limited: depth to bedrock (very limited)	1.00	Very limited: depth to bedrock (very limited) hard to pack (limited) too clayey (moderately limited)	1.00 0.70 0.38
50007: Vanmeter-----	Very limited: depth to bedrock (very limited) slope (very limited)	1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited)	1.00 1.00	Very limited: depth to bedrock (very limited) slope (very limited) too clayey (limited)	1.00 1.00 0.81	Very limited: depth to bedrock (very limited) slope (very limited)	1.00 1.00	Very limited: depth to bedrock (very limited) slope (very limited) too clayey (limited)	1.00 1.00 0.62
50008: Keswick-----	Very limited: wetness (very limited) percs slowly (limited)	1.00 0.71	Very limited: wetness (very limited) slope (limited)	1.00 0.91	Limited: wetness (limited) too clayey (limited) too acid (moderately limited)	0.99 0.69 0.36	Limited: wetness (limited)	0.80	Moderately limited: wetness (moderately limited) too clayey (moderately limited) too acid (moderately limited)	0.50 0.43 0.36

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50009: Keswick-----	Very limited: wetness (very limited) percs slowly (limited) slope (limited)	1.00 0.93 0.63	Very limited: slope (very limited) wetness (very limited)	1.00 1.00	Limited: wetness (limited) slope (limited) too acid (moderately limited)	0.99 0.63 0.54	Limited: wetness (limited) slope (limited)	0.80 0.63	Limited: hard to pack (limited) slope (limited) too acid (moderately limited)	0.70 0.63 0.54
50010: Winnegan-----	Very limited: slope (very limited) wetness (very limited) percs slowly (limited)	1.00 1.00 0.93	Very limited: slope (very limited) wetness (very limited)	1.00 1.00	Very limited: slope (very limited) wetness (limited) too clayey (moderately limited)	1.00 0.69 0.49	Very limited: slope (very limited) wetness (moderately limited)	1.00 0.44	Very limited: slope (very limited) wetness (moderately limited) too clayey (slightly limited)	1.00 0.35 0.25
50011: Winnegan-----	Very limited: slope (very limited) wetness (very limited) percs slowly (limited)	1.00 1.00 0.93	Very limited: slope (very limited) wetness (very limited)	1.00 1.00	Very limited: slope (very limited) wetness (limited) too clayey (moderately limited)	1.00 0.69 0.49	Very limited: slope (very limited) wetness (moderately limited)	1.00 0.44	Very limited: slope (very limited) too acid (moderately limited) wetness (moderately limited)	1.00 0.48 0.35
50012: Putnam-----	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited) too clayey (limited) too acid (slightly limited)	1.00 0.80 0.30	Very limited: wetness (very limited)	1.00	Limited: wetness (limited) too clayey (moderately limited) too acid (slightly limited)	0.99 0.60 0.30
60003: Menfro-----	Moderately limited: slope (moderately limited) percs slowly (slightly limited)	0.37 0.25	Very limited: slope (very limited) seepage (moderately limited)	1.00 0.50	Moderately limited: slope (moderately limited) too clayey (slightly limited)	0.37 0.06	Moderately limited: slope (moderately limited)	0.37	Moderately limited: slope (moderately limited)	0.37

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60008: Menfro-----	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: slope (very limited) seepage (moderately limited)	1.00 0.50	Very limited: slope (very limited) too acid (moderately limited) too clayey (slightly limited)	1.00 0.36 0.02	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) too acid (moderately limited)	1.00 0.36
60009: Clinkenbeard--	Very limited: slope (very limited) depth to bedrock (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) large stones (very limited) depth to bedrock (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) too clayey (limited)	1.00 1.00 0.71	Very limited: slope (very limited) depth to bedrock (very limited)	1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) large stones >35% (very limited)	1.00 1.00 1.00
Gasconade----	Very limited: depth to bedrock (very limited) slope (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) too clayey (limited)	1.00 1.00 0.73	Very limited: depth to bedrock (very limited) slope (very limited)	1.00 1.00	Very limited: depth to bedrock (very limited) slope (very limited) large stones >35% (very limited)	1.00 1.00 1.00
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
60010: Arisburg-----	Very limited: wetness (very limited) percs slowly (limited)	1.00 0.71	Very limited: wetness (very limited)	1.00	Limited: wetness (limited) too clayey (slightly limited)	0.99 0.27	Limited: wetness (limited)	0.80	Moderately limited: wetness (moderately limited) too clayey (slightly limited)	0.50 0.13
60011: Arisburg-----	Very limited: wetness (very limited) percs slowly (limited)	1.00 0.71	Very limited: wetness (very limited) slope (limited) seepage (moderately limited)	1.00 0.91 0.50	Limited: wetness (limited) too clayey (moderately limited) too acid (slightly limited)	0.99 0.45 0.30	Limited: wetness (limited)	0.80	Limited: hard to pack (limited) wetness (moderately limited) too acid (slightly limited)	0.70 0.50 0.30

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60012: Bardley-----	Very limited: slope (very limited) depth to bedrock (very limited) large stones (moderately limited)	1.00 1.00 0.35	Very limited: slope (very limited) depth to bedrock (very limited) large stones (moderately limited)	1.00 1.00 0.59	Very limited: slope (very limited) depth to bedrock (very limited) too clayey (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited)	1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) too clayey (very limited)	1.00 1.00 1.00
Clinkenbeard--	Very limited: slope (very limited) depth to bedrock (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) large stones (very limited) depth to bedrock (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) too clayey (limited)	1.00 1.00 0.73	Very limited: slope (very limited) depth to bedrock (very limited)	1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) large stones >35% (very limited)	1.00 1.00 1.00
60019: Hatton-----	Very limited: wetness (very limited) percs slowly (very limited)	1.00 1.00	Very limited: wetness (very limited) slope (moderately limited)	1.00 0.31	Limited: wetness (limited) too acid (limited) too clayey (moderately limited)	0.79 0.60 0.60	Limited: wetness (limited)	0.60	Limited: hard to pack (limited) too acid (limited) wetness (moderately limited)	0.70 0.60 0.40
60020: Lenzburg-----	Limited: percs slowly (limited)	0.71	Limited: slope (limited)	0.66	Slightly limited: too clayey (slightly limited)	0.21	Not limited		Slightly limited: too clayey (slightly limited) small stones (slightly limited)	0.08 0.01
60021: Lenzburg-----	Very limited: slope (very limited) percs slowly (limited)	1.00 0.71	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) too clayey (slightly limited) large stones (slightly limited)	1.00 0.18 0.02	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) too clayey (slightly limited)	1.00 0.05

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60022: Leonard-----	Very limited: wetness (very limited) percs slowly (limited)	1.00 0.93	Very limited: wetness (very limited) slope (slightly limited)	1.00 0.08	Very limited: wetness (very limited) too clayey (limited) too acid (slightly limited)	1.00 0.73 0.18	Very limited: wetness (very limited)	1.00	Limited: wetness (limited) hard to pack (limited) too clayey (moderately limited)	0.81 0.70 0.49
60023: Marion-----	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited) too clayey (limited) too acid (limited)	1.00 0.89 0.60	Limited: wetness (limited)	0.99	Limited: too clayey (limited) too acid (limited) wetness (moderately limited)	0.78 0.60 0.60
60024: Menfro-----	Slightly limited: percs slowly (slightly limited)	0.25	Moderately limited: seepage (moderately limited) slope (moderately limited)	0.50 0.31	Slightly limited: too clayey (slightly limited)	0.26	Not limited		Slightly limited: too clayey (slightly limited)	0.12
60025: Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
Harvester-----	Limited: percs slowly (limited)	0.71	Moderately limited: seepage (moderately limited)	0.50	Slightly limited: too clayey (slightly limited) too acid (slightly limited)	0.12 0.12	Not limited		Slightly limited: too acid (slightly limited) too clayey (slightly limited)	0.12 0.01
60026: Weller-----	Limited: wetness (limited)	0.98	Very limited: wetness (very limited) seepage (moderately limited)	1.00 0.50	Moderately limited: too clayey (moderately limited) wetness (moderately limited) too acid (slightly limited)	0.60 0.59 0.18	Slightly limited: wetness (slightly limited)	0.29	Moderately limited: too clayey (moderately limited) wetness (slightly limited) too acid (slightly limited)	0.30 0.28 0.18

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60027: Weller-----	Limited: wetness (limited)	0.98	Very limited: wetness (very limited)	1.00	Limited: too clayey (limited) wetness (moderately limited)	0.67 0.59	Slightly limited: wetness (slightly limited)	0.29	Moderately limited: too clayey (moderately limited) wetness (slightly limited)	0.40 0.28
60028: Weller-----	Limited: wetness (limited)	0.98	Very limited: wetness (very limited) slope (limited)	1.00 0.91	Moderately limited: wetness (moderately limited) too clayey (moderately limited)	0.59 0.40	Slightly limited: wetness (slightly limited)	0.29	Limited: hard to pack (limited) wetness (slightly limited) too clayey (slightly limited)	0.70 0.28 0.20
60029: Weller-----	Limited: wetness (limited)	0.98	Very limited: wetness (very limited) slope (limited)	1.00 0.91	Moderately limited: wetness (moderately limited) too clayey (moderately limited)	0.59 0.40	Slightly limited: wetness (slightly limited)	0.29	Limited: hard to pack (limited) wetness (slightly limited) too clayey (slightly limited)	0.70 0.28 0.20
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60030: Winfield-----	Very limited: wetness (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: wetness (very limited) slope (very limited) seepage (moderately limited)	1.00 1.00 0.50	Limited: wetness (limited) too clayey (slightly limited) too acid (slightly limited)	0.79 0.07 0.06	Limited: wetness (limited)	0.60	Moderately limited: wetness (moderately limited) too acid (slightly limited)	0.40 0.06
60031: Winfield-----	Limited: wetness (limited) slope (moderately limited) percs slowly (slightly limited)	0.85 0.37 0.25	Very limited: slope (very limited) wetness (very limited) seepage (moderately limited)	1.00 1.00 0.50	Moderately limited: wetness (moderately limited) slope (moderately limited) too clayey (slightly limited)	0.49 0.37 0.06	Moderately limited: slope (moderately limited) wetness (slightly limited)	0.37 0.19	Moderately limited: slope (moderately limited) wetness (slightly limited)	0.37 0.08

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60032: Winfield-----	Very limited: slope (very limited) wetness (very limited) percs slowly (slightly limited)	1.00 1.00 0.25	Very limited: slope (very limited) wetness (very limited) seepage (moderately limited)	1.00 1.00 0.50	Very limited: slope (very limited) wetness (limited) too clayey (slightly limited)	1.00 0.92 0.12	Very limited: slope (very limited) wetness (limited)	1.00 0.73	Very limited: slope (very limited) wetness (moderately limited) too acid (slightly limited)	1.00 0.47 0.12
60033: Wrengart-----	Very limited: wetness (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: wetness (very limited) slope (limited) seepage (moderately limited)	1.00 0.91 0.50	Limited: wetness (limited) too clayey (slightly limited)	0.69 0.16	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited) too clayey (slightly limited)	0.35 0.04
60034: Wrengart-----	Very limited: wetness (very limited) percs slowly (slightly limited) slope (slightly limited)	1.00 0.25 0.16	Very limited: wetness (very limited) slope (very limited) seepage (moderately limited)	1.00 1.00 0.50	Very limited: too clayey (very limited) wetness (limited) too acid (slightly limited)	1.00 0.99 0.18	Limited: wetness (limited) slope (slightly limited)	0.80 0.16	Moderately limited: wetness (moderately limited) too clayey (slightly limited) too acid (slightly limited)	0.50 0.22 0.18
60035: Wrengart-----	Very limited: wetness (very limited) percs slowly (slightly limited) slope (slightly limited)	1.00 0.25 0.16	Very limited: wetness (very limited) slope (very limited) seepage (moderately limited)	1.00 1.00 0.50	Very limited: too clayey (very limited) wetness (limited) too acid (slightly limited)	1.00 0.99 0.18	Limited: wetness (limited) slope (slightly limited)	0.80 0.16	Moderately limited: wetness (moderately limited) too clayey (slightly limited) too acid (slightly limited)	0.50 0.22 0.18
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60036: Menfro-----	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: slope (very limited) seepage (moderately limited)	1.00 0.50	Very limited: slope (very limited) too clayey (slightly limited) too acid (slightly limited)	1.00 0.13 0.06	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) too acid (slightly limited) too clayey (slightly limited)	1.00 0.06 0.02

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60037: Wrengart-----	Very limited: wetness (very limited) slope (limited) percs slowly (slightly limited)	1.00 0.63 0.25	Very limited: slope (very limited) wetness (very limited) seepage (moderately limited)	1.00 1.00 0.50	Limited: wetness (limited) slope (limited) too acid (moderately limited)	0.69 0.63 0.54	Limited: slope (limited) wetness (moderately limited)	0.63 0.44	Limited: slope (limited) too acid (moderately limited) wetness (moderately limited)	0.63 0.54 0.35
60038: Rocheport-----	Very limited: slope (very limited) wetness (limited) percs slowly (limited)	1.00 0.89 0.71	Very limited: slope (very limited) wetness (very limited) depth to bedrock (limited)	1.00 1.00 0.67	Very limited: depth to bedrock (very limited) slope (very limited) too clayey (limited)	1.00 1.00 0.83	Very limited: slope (very limited) depth to bedrock (moderately limited) wetness (slightly limited)	1.00 0.51 0.22	Very limited: slope (very limited) too clayey (limited) depth to bedrock (moderately limited)	1.00 0.66 0.51
Bonnefemme----	Very limited: depth to bedrock (very limited) slope (very limited) percs slowly (limited)	1.00 1.00 0.74	Very limited: slope (very limited) depth to bedrock (very limited)	1.00 1.00	Very limited: depth to bedrock (very limited) slope (very limited) too clayey (limited)	1.00 1.00 0.78	Very limited: depth to bedrock (very limited) slope (very limited)	1.00 1.00	Very limited: depth to bedrock (very limited) slope (very limited) hard to pack (limited)	1.00 1.00 0.70
60039: Rocheport-----	Very limited: slope (very limited) wetness (very limited) percs slowly (limited)	1.00 1.00 0.75	Very limited: slope (very limited) wetness (very limited) depth to bedrock (limited)	1.00 1.00 0.75	Very limited: slope (very limited) depth to bedrock (very limited) wetness (limited)	1.00 1.00 0.79	Very limited: slope (very limited) wetness (limited) depth to bedrock (moderately limited)	1.00 0.60 0.57	Very limited: slope (very limited) depth to bedrock (moderately limited) too acid (moderately limited)	1.00 0.57 0.54
Bonnefemme----	Very limited: slope (very limited) depth to bedrock (very limited) percs slowly (limited)	1.00 1.00 0.71	Very limited: slope (very limited) depth to bedrock (very limited)	1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) too clayey (moderately limited)	1.00 1.00 0.60	Very limited: slope (very limited) depth to bedrock (very limited)	1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) hard to pack (limited)	1.00 1.00 0.70

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
64002: Freeburg-----	Very limited: wetness (very limited) percs slowly (limited)	1.00 0.71	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited) too clayey (slightly limited)	1.00 0.16	Very limited: wetness (very limited)	1.00	Limited: wetness (limited) too clayey (slightly limited)	0.94 0.04
64004: Auxvasse-----	Very limited: wetness (very limited) flooding (rare) (moderately limited)	1.00 0.60	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited) too clayey (limited) flooding (rare) (moderately limited)	1.00 0.85 0.60	Limited: wetness (limited) flooding (rare) (moderately limited)	0.99 0.60	Limited: hard to pack (limited) too clayey (limited) wetness (moderately limited)	0.70 0.69 0.60
64005: Moniteau-----	Very limited: wetness (very limited) flooding (very limited) percs slowly (limited)	1.00 1.00 0.71	Very limited: flooding (very limited) wetness (very limited)	1.00 1.00	Very limited: wetness (very limited) flooding (very limited) too acid (moderately limited)	1.00 1.00 0.54	Very limited: flooding (very limited) wetness (very limited)	1.00 1.00	Very limited: wetness (very limited) too acid (moderately limited) too clayey (slightly limited)	1.00 0.54 0.06
64006: Tanglenook----	Very limited: wetness (very limited) percs slowly (limited) flooding (rare) (moderately limited)	1.00 0.93 0.60	Very limited: wetness (very limited) slope (slightly limited)	1.00 0.08	Very limited: wetness (very limited) too clayey (limited) flooding (rare) (moderately limited)	1.00 0.62 0.60	Very limited: wetness (very limited) flooding (rare) (moderately limited)	1.00 0.60	Very limited: wetness (very limited) too clayey (moderately limited)	1.00 0.34
66007: Leta-----	Very limited: flooding (very limited) wetness (very limited) percs slowly (limited)	1.00 1.00 0.93	Very limited: flooding (very limited) wetness (very limited) seepage (moderately limited)	1.00 1.00 0.50	Very limited: flooding (very limited) wetness (limited) too clayey (limited)	1.00 0.99 0.64	Very limited: flooding (very limited) wetness (limited)	1.00 0.80	Moderately limited: wetness (moderately limited) too clayey (moderately limited)	0.50 0.37

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66014: Haymond-----	Very limited: flooding (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: flooding (very limited) seepage (moderately limited)	1.00 0.50	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Not limited	
66015: Blake-----	Very limited: flooding (very limited) wetness (limited) percs slowly (slightly limited)	1.00 0.98 0.25	Very limited: flooding (very limited) wetness (very limited) seepage (moderately limited)	1.00 1.00 0.50	Very limited: flooding (very limited) wetness (moderately limited)	1.00 0.59	Very limited: flooding (very limited) wetness (slightly limited)	1.00 0.29	Slightly limited: wetness (slightly limited)	0.28
66016: Blake-----	Very limited: flooding (very limited) wetness (limited) percs slowly (slightly limited)	1.00 0.98 0.25	Very limited: flooding (very limited) wetness (very limited) seepage (moderately limited)	1.00 1.00 0.50	Very limited: flooding (very limited) wetness (moderately limited)	1.00 0.59	Very limited: flooding (very limited) wetness (slightly limited)	1.00 0.29	Slightly limited: wetness (slightly limited)	0.28
66017: Cedargap-----	Very limited: flooding (very limited) large stones (slightly limited) percs slowly (slightly limited)	1.00 0.28 0.25	Very limited: flooding (very limited) seepage (moderately limited) large stones (slightly limited)	1.00 0.50 0.08	Very limited: flooding (very limited) large stones (moderately limited)	1.00 0.46	Very limited: flooding (very limited)	1.00	Slightly limited: large stones (slightly limited) small stones (slightly limited)	0.15 0.02
Dameron-----	Very limited: flooding (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: flooding (very limited) seepage (moderately limited)	1.00 0.50	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Slightly limited: small stones (slightly limited)	0.25
66018: Darwin-----	Very limited: wetness (very limited) flooding (very limited) percs slowly (very limited)	1.00 1.00 1.00	Very limited: flooding (very limited) wetness (very limited)	1.00 1.00	Very limited: wetness (very limited) flooding (very limited) too clayey (limited)	1.00 1.00 0.81	Very limited: flooding (very limited) wetness (very limited)	1.00 1.00	Very limited: wetness (very limited) hard to pack (limited) too clayey (limited)	1.00 0.70 0.63

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66019: Haynie-----	Very limited: flooding (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: flooding (very limited) seepage (moderately limited)	1.00 0.50	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Not limited	
66020: Haynie-----	Very limited: flooding (very limited) percs slowly (slightly limited)	1.00 0.25	Very limited: flooding (very limited) seepage (moderately limited)	1.00 0.50	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Not limited	
66021: Perche-----	Very limited: flooding (very limited) wetness (very limited) percs slowly (slightly limited)	1.00 1.00 0.25	Very limited: flooding (very limited) wetness (very limited) seepage (moderately limited)	1.00 1.00 0.50	Very limited: flooding (very limited) wetness (limited)	1.00 0.99	Very limited: flooding (very limited) wetness (limited)	1.00 0.80	Moderately limited: wetness (moderately limited)	0.50
66022: Sandoover-----	Very limited: flooding (very limited) wetness (very limited) poor filter (very limited)	1.00 1.00 1.00	Very limited: flooding (very limited) wetness (very limited) seepage (very limited)	1.00 1.00 1.00	Very limited: flooding (very limited) wetness (limited)	1.00 0.79	Very limited: flooding (very limited) seepage (very limited) wetness (limited)	1.00 1.00 0.60	Moderately limited: wetness (moderately limited)	0.40
66023: Sarpy-----	Very limited: flooding (very limited) poor filter (very limited)	1.00 1.00	Very limited: flooding (very limited) seepage (very limited)	1.00 1.00	Very limited: flooding (very limited) too sandy (very limited) seepage (very limited)	1.00 1.00 1.00	Very limited: flooding (very limited) seepage (very limited)	1.00 1.00	Very limited: seepage (very limited) too sandy (very limited)	1.00 1.00

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons		Sanitary landfill (trench)		Sanitary landfill (area)		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66024: Wilbur-----	Very limited: wetness (very limited) flooding (very limited) percs slowly (slightly limited)	1.00 1.00 0.25	Very limited: flooding (very limited) wetness (very limited) seepage (moderately limited)	1.00 1.00 0.50	Very limited: flooding (very limited) wetness (limited)	1.00 0.99	Very limited: flooding (very limited) wetness (limited)	1.00 0.80	Moderately limited: wetness (moderately limited)	0.50
66025: Jemerson-----	Moderately limited: flooding (rare) (moderately limited) wetness (moderately limited) percs slowly (slightly limited)	0.60 0.52 0.25	Moderately limited: seepage (moderately limited) wetness (moderately limited)	0.50 0.39	Moderately limited: flooding (rare) (moderately limited) wetness (slightly limited)	0.60 0.26	Moderately limited: flooding (rare) (moderately limited)	0.60	Not limited	
99000: Pits-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99003: Miscellaneous water-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 15.--Construction Materials and Excavating

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Roadfill		Source for sand		Source for gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50000: Adco-----	Very limited: low strength (very limited) wetness (limited)	1.00 0.71	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: wetness (limited)	0.71	Very limited: wetness (very limited) too clayey (limited) cutbanks cave (slightly limited)	1.00 0.98 0.29
50001: Armstrong----	Very limited: low strength (very limited) shrink-swell (limited) wetness (moderately limited)	1.00 0.88 0.48	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: too clayey (very limited) wetness (moderately limited) too acid (slightly limited)	1.00 0.48 0.24	Very limited: wetness (very limited) too clayey (moderately limited) cutbanks cave (slightly limited)	1.00 0.42 0.29
50002: Keswick-----	Very limited: low strength (very limited) shrink-swell (limited) wetness (moderately limited)	1.00 0.65 0.48	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: too clayey (limited) wetness (moderately limited) too acid (moderately limited)	1.00 0.48 0.36	Very limited: wetness (very limited) too clayey (moderately limited) cutbanks cave (slightly limited)	1.00 0.43 0.29
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50003: Mexico-----	Very limited: low strength (very limited) shrink-swell (very limited) wetness (limited)	1.00 1.00 0.71	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: wetness (limited)	0.71	Very limited: wetness (very limited) too clayey (limited) cutbanks cave (slightly limited)	1.00 0.66 0.29

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Source for sand		Source for gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50004: Mexico-----	Very limited: shrink-swell (very limited) low strength (very limited) wetness (limited)	1.00 1.00 0.71	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: wetness (limited)	0.71	Very limited: wetness (very limited) too clayey (moderately limited) cutbanks cave (slightly limited)	1.00 0.59 0.29
50005: Mexico-----	Very limited: low strength (very limited) shrink-swell (very limited) wetness (limited)	1.00 1.00 0.71	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: wetness (limited)	0.71	Very limited: wetness (very limited) too clayey (limited) cutbanks cave (slightly limited)	1.00 0.66 0.29
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50006: Vanmeter-----	Very limited: low strength (very limited) depth to bedrock (very limited) shrink-swell (very limited)	1.00 1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: depth to bedrock (very limited) too clayey (very limited)	1.00 1.00	Very limited: hard bedrock <40" (very limited) soft bedrock (limited) too clayey (moderately limited)	1.00 0.95 0.38
50007: Vanmeter-----	Very limited: low strength (very limited) depth to bedrock (very limited) slope (very limited)	1.00 1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) too clayey (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) soft bedrock (limited) too clayey (limited)	1.00 0.95 0.62
50008: Keswick-----	Very limited: low strength (very limited) shrink-swell (limited) wetness (moderately limited)	1.00 0.65 0.48	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: too clayey (limited) wetness (moderately limited) too acid (moderately limited)	1.00 0.48 0.36	Very limited: wetness (very limited) too clayey (moderately limited) cutbanks cave (slightly limited)	1.00 0.43 0.29

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Source for sand		Source for gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50009: Keswick-----	Very limited: low strength (very limited) shrink-swell (very limited) wetness (moderately limited)	1.00 1.00 0.48	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: too clayey (limited) slope (limited) too acid (moderately limited)	0.88 0.63 0.54	Very limited: wetness (very limited) slope (limited) cutbanks cave (slightly limited)	1.00 0.63 0.29
50010: Winnegan-----	Very limited: low strength (very limited) shrink-swell (very limited) slope (moderately limited)	1.00 1.00 0.50	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: slope (very limited) too clayey (limited) too acid (moderately limited)	1.00 0.95 0.42	Very limited: slope (very limited) wetness (limited) cutbanks cave (slightly limited)	1.00 0.99 0.29
50011: Winnegan-----	Very limited: low strength (very limited) slope (very limited) shrink-swell (very limited)	1.00 1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: slope (very limited) too clayey (limited) too acid (moderately limited)	1.00 0.95 0.48	Very limited: slope (very limited) wetness (limited) cutbanks cave (slightly limited)	1.00 0.99 0.29
50012: Putnam-----	Very limited: low strength (very limited) wetness (very limited)	1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: wetness (very limited)	1.00	Very limited: wetness (very limited) too clayey (moderately limited) cutbanks cave (slightly limited)	1.00 0.60 0.29
60003: Menfro-----	Very limited: low strength (very limited) shrink-swell (slightly limited)	1.00 0.04	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Moderately limited: too clayey (moderately limited) slope (moderately limited)	0.39 0.37	Moderately limited: slope (moderately limited) cutbanks cave (slightly limited)	0.37 0.29

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Source for sand		Source for gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60008: Menfro-----	Very limited: low strength (very limited) slope (very limited) shrink-swell (slightly limited)	1.00 1.00 0.10	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: slope (very limited) too clayey (slightly limited) too acid (slightly limited)	1.00 0.29 0.18	Very limited: slope (very limited) cutbanks cave (slightly limited)	1.00 0.29
60009: Clinkenbeard--	Very limited: slope (very limited) low strength (very limited) depth to bedrock (very limited)	1.00 1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: slope (very limited) large stones >25% (very limited) depth to bedrock (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) hard bedrock <40" (very limited) large stones (very limited)	1.00 1.00 1.00
Gasconade----	Very limited: slope (very limited) low strength (very limited) depth to bedrock (very limited)	1.00 1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: depth to bedrock (very limited) slope (very limited) large stones >25% (very limited)	1.00 1.00 1.00	Very limited: hard bedrock <40" (very limited) slope (very limited) large stones (very limited)	1.00 1.00 1.00
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
60010: Arisburg-----	Very limited: low strength (very limited) shrink-swell (moderately limited) wetness (moderately limited)	1.00 0.52 0.48	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: too clayey (limited) wetness (moderately limited)	0.73 0.48	Very limited: wetness (very limited) cutbanks cave (slightly limited) too clayey (slightly limited)	1.00 0.29 0.13
60011: Arisburg-----	Very limited: low strength (very limited) shrink-swell (very limited) wetness (moderately limited)	1.00 1.00 0.48	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: too clayey (limited) wetness (moderately limited) too acid (slightly limited)	0.91 0.48 0.30	Very limited: wetness (very limited) cutbanks cave (slightly limited) too clayey (slightly limited)	1.00 0.29 0.23

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Source for sand		Source for gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60012: Bardley-----	Very limited: depth to bedrock (very limited) slope (very limited) low strength (very limited)	1.00 1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: slope (very limited) too clayey (very limited) large stones (limited)	1.00 1.00 0.99	Very limited: slope (very limited) hard bedrock <40" (very limited) too clayey (very limited)	1.00 1.00 1.00
Clinkenbeard--	Very limited: low strength (very limited) depth to bedrock (very limited) large stones (very limited)	1.00 1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: slope (very limited) large stones >25% (very limited) depth to bedrock (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) hard bedrock <40" (very limited) large stones (very limited)	1.00 1.00 1.00
60019: Hatton-----	Very limited: low strength (very limited) shrink-swell (moderately limited) wetness (slightly limited)	1.00 0.45 0.12	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: too acid (limited) wetness (slightly limited)	0.60 0.12	Very limited: wetness (very limited) too clayey (moderately limited) cutbanks cave (slightly limited)	1.00 0.30 0.29
60020: Lenzburg-----	Very limited: shrink-swell (very limited) low strength (very limited)	1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: small stones (very limited) too clayey (limited) area reclaim (slightly limited)	1.00 0.65 0.08	Very limited: cutbanks cave (very limited) too clayey (slightly limited)	1.00 0.08
60021: Lenzburg-----	Very limited: slope (very limited) low strength (very limited) shrink-swell (moderately limited)	1.00 1.00 0.45	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: small stones (very limited) slope (very limited) too clayey (moderately limited)	1.00 1.00 0.57	Very limited: cutbanks cave (very limited) slope (very limited) too clayey (slightly limited)	1.00 1.00 0.05

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Source for sand		Source for gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60022: Leonard-----	Very limited: low strength (very limited) shrink-swell (very limited) wetness (limited)	1.00 1.00 0.96	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: too clayey (very limited) wetness (limited) too acid (moderately limited)	1.00 0.96 0.36	Very limited: wetness (very limited) too clayey (moderately limited) cutbanks cave (slightly limited)	1.00 0.49 0.29
60023: Marion-----	Very limited: low strength (very limited) wetness (limited)	1.00 0.86	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: wetness (limited) too acid (limited)	0.86 0.60	Very limited: wetness (very limited) too clayey (limited) cutbanks cave (slightly limited)	1.00 0.78 0.29
60024: Menfro-----	Very limited: low strength (very limited)	1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: too clayey (limited)	0.71	Slightly limited: cutbanks cave (slightly limited) too clayey (slightly limited)	0.29 0.12
60025: Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
Harvester-----	Very limited: low strength (very limited) shrink-swell (moderately limited)	1.00 0.45	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Moderately limited: too clayey (moderately limited) too acid (slightly limited)	0.51 0.24	Slightly limited: cutbanks cave (slightly limited) too clayey (slightly limited)	0.29 0.01
60026: Weller-----	Very limited: shrink-swell (very limited) low strength (very limited)	1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Not limited		Limited: wetness (limited) too clayey (moderately limited) cutbanks cave (slightly limited)	0.95 0.30 0.29

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Source for sand		Source for gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60027: Weller-----	Very limited: low strength (very limited)	1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Not limited		Limited: wetness (limited) too clayey (moderately limited) cutbanks cave (slightly limited)	0.95 0.40 0.29
60028: Weller-----	Very limited: low strength (very limited)	1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Not limited		Limited: wetness (limited) cutbanks cave (slightly limited) too clayey (slightly limited)	0.95 0.29 0.20
60029: Weller-----	Very limited: low strength (very limited)	1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Not limited		Limited: wetness (limited) cutbanks cave (slightly limited) too clayey (slightly limited)	0.95 0.29 0.20
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60030: Winfield-----	Very limited: low strength (very limited) shrink-swell (slightly limited) wetness (slightly limited)	1.00 0.28 0.12	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Moderately limited: too clayey (moderately limited) wetness (slightly limited)	0.42 0.12	Very limited: wetness (very limited) cutbanks cave (slightly limited)	1.00 0.29
60031: Winfield-----	Very limited: low strength (very limited) shrink-swell (slightly limited)	1.00 0.12	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Moderately limited: too clayey (moderately limited) slope (moderately limited)	0.38 0.37	Limited: wetness (limited) slope (moderately limited) cutbanks cave (slightly limited)	0.87 0.37 0.29

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Source for sand		Source for gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60032: Winfield-----	Very limited: low strength (very limited) slope (very limited) shrink-swell (moderately limited)	1.00 1.00 0.43	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: slope (very limited) wetness (moderately limited)	1.00 0.33	Very limited: slope (very limited) wetness (very limited) cutbanks cave (slightly limited)	1.00 1.00 0.29
60033: Wrengart-----	Very limited: low strength (very limited) shrink-swell (moderately limited) wetness (slightly limited)	1.00 0.41 0.03	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Possible: excess fines (thickest layer) possible source (bottom layer)	1.00 0.33	Moderately limited: too clayey (moderately limited) wetness (slightly limited)	0.58 0.03	Very limited: cutbanks cave (very limited) wetness (limited) too clayey (slightly limited)	1.00 0.99 0.04
60034: Wrengart-----	Very limited: low strength (very limited) wetness (moderately limited) shrink-swell (moderately limited)	1.00 0.48 0.45	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: too clayey (limited) wetness (moderately limited) too acid (slightly limited)	0.90 0.48 0.18	Very limited: cutbanks cave (very limited) wetness (very limited) too clayey (slightly limited)	1.00 1.00 0.22
60035: Wrengart-----	Very limited: low strength (very limited) wetness (moderately limited) shrink-swell (moderately limited)	1.00 0.48 0.45	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: too clayey (limited) wetness (moderately limited) too acid (slightly limited)	0.90 0.48 0.18	Very limited: cutbanks cave (very limited) wetness (very limited) too clayey (slightly limited)	1.00 1.00 0.22
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60036: Menfro-----	Very limited: low strength (very limited) shrink-swell (slightly limited) slope (slightly limited)	1.00 0.20 0.17	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: slope (very limited) too clayey (moderately limited) too acid (slightly limited)	1.00 0.53 0.06	Very limited: slope (very limited) cutbanks cave (slightly limited) too clayey (slightly limited)	1.00 0.29 0.02

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Source for sand		Source for gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60037: Wrengart-----	Very limited: low strength (very limited) shrink-swell (moderately limited) wetness (slightly limited)	1.00 0.34 0.03	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Limited: slope (limited) too acid (moderately limited) too clayey (moderately limited)	0.63 0.54 0.41	Very limited: cutbanks cave (very limited) wetness (limited) slope (limited)	1.00 0.99 0.63
60038: Rocheport-----	Very limited: low strength (very limited) shrink-swell (limited) depth to bedrock (moderately limited)	1.00 0.96 0.51	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: slope (very limited) too clayey (moderately limited) too acid (slightly limited)	1.00 0.60 0.30	Very limited: slope (very limited) wetness (limited) too clayey (limited)	1.00 0.90 0.66
Bonnefemme----	Very limited: low strength (very limited) depth to bedrock (very limited) shrink-swell (very limited)	1.00 1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) too clayey (very limited)	1.00 1.00 1.00	Very limited: hard bedrock <40" (very limited) slope (very limited) too clayey (moderately limited)	1.00 1.00 0.56
60039: Rocheport-----	Very limited: low strength (very limited) slope (very limited) depth to bedrock (moderately limited)	1.00 1.00 0.57	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: slope (very limited) too clayey (limited) too acid (moderately limited)	1.00 0.62 0.54	Very limited: slope (very limited) wetness (very limited) depth to bedrock (limited)	1.00 1.00 0.75
Bonnefemme----	Very limited: low strength (very limited) depth to bedrock (very limited) slope (very limited)	1.00 1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: slope (very limited) too clayey (limited) depth to bedrock (moderately limited)	1.00 0.80 0.52	Very limited: slope (very limited) hard bedrock <40" (very limited) too clayey (moderately limited)	1.00 1.00 0.30

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Source for sand		Source for gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
64002: Freeburg-----	Very limited: low strength (very limited) wetness (very limited) shrink-swell (slightly limited)	1.00 0.99 0.30	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: wetness (very limited) too clayey (moderately limited) too acid (moderately limited)	0.99 0.58 0.36	Very limited: wetness (very limited) cutbanks cave (slightly limited) too clayey (slightly limited)	1.00 0.29 0.04
64004: Auxvasse-----	Very limited: low strength (very limited) wetness (limited)	1.00 0.86	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Limited: wetness (limited)	0.86	Very limited: wetness (very limited) too clayey (limited) cutbanks cave (slightly limited)	1.00 0.69 0.29
64005: Moniteau-----	Very limited: wetness (very limited) low strength (very limited)	1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: wetness (very limited) too clayey (limited) too acid (limited)	1.00 0.61 0.60	Very limited: wetness (very limited) flooding (moderately limited) cutbanks cave (slightly limited)	1.00 0.60 0.29
64006: Tanglenook----	Very limited: low strength (very limited) wetness (very limited) shrink-swell (moderately limited)	1.00 1.00 0.55	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: wetness (very limited) too clayey (limited)	1.00 0.82	Very limited: wetness (very limited) too clayey (moderately limited) cutbanks cave (slightly limited)	1.00 0.34 0.29
66007: Leta-----	Limited: low strength (limited) wetness (moderately limited) shrink-swell (slightly limited)	0.78 0.48 0.29	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: too clayey (very limited) wetness (moderately limited)	1.00 0.48	Very limited: wetness (very limited) flooding (moderately limited) too clayey (moderately limited)	1.00 0.60 0.37

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Source for sand		Source for gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66014: Haymond-----	Slightly limited: low strength (slightly limited)	0.22	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Not limited		Moderately limited: flooding (moderately limited) cutbanks cave (slightly limited)	0.60 0.29
66015: Blake-----	Very limited: low strength (very limited) shrink-swell (slightly limited)	1.00 0.12	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Slightly limited: too clayey (slightly limited) excess lime (slightly limited)	0.05 0.03	Limited: wetness (limited) flooding (moderately limited) cutbanks cave (slightly limited)	0.95 0.60 0.29
66016: Blake-----	Very limited: low strength (very limited) shrink-swell (moderately limited)	1.00 0.45	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Slightly limited: excess lime (slightly limited)	0.03	Limited: wetness (limited) flooding (moderately limited) cutbanks cave (slightly limited)	0.95 0.60 0.29
66017: Cedargap-----	Slightly limited: large stones (slightly limited)	0.28	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Very limited: small stones (very limited) area reclaim (very limited) too clayey (slightly limited)	1.00 1.00 0.17	Moderately limited: flooding (moderately limited) cutbanks cave (slightly limited) large stones (slightly limited)	0.60 0.29 0.28
Dameron-----	Not limited		Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Very limited: area reclaim (very limited) large stones (slightly limited)	1.00 0.01	Very limited: cutbanks cave (very limited) flooding (moderately limited)	1.00 0.60
66018: Darwin-----	Very limited: shrink-swell (very limited) low strength (very limited) wetness (very limited)	1.00 1.00 1.00	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: wetness (very limited) too clayey (limited)	1.00 1.00	Very limited: wetness (very limited) too clayey (limited) flooding (moderately limited)	1.00 0.63 0.60

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Source for sand		Source for gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66019: Haynie-----	Not limited		Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Not limited		Moderately limited: flooding (moderately limited) cutbanks cave (slightly limited)	0.60 0.29
66020: Haynie-----	Not limited		Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Slightly limited: excess lime (slightly limited)	0.01	Moderately limited: flooding (moderately limited) cutbanks cave (slightly limited)	0.60 0.29
66021: Perche-----	Moderately limited: wetness (moderately limited)	0.48	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Moderately limited: wetness (moderately limited)	0.48	Very limited: cutbanks cave (very limited) wetness (very limited) flooding (moderately limited)	1.00 1.00 0.60
66022: Sandoover-----	Moderately limited: shrink-swell (moderately limited) wetness (slightly limited)	0.45 0.12	Possible: excess fines (bottom layer) possible source (thickest layer)	1.00 0.42	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: too sandy (very limited) wetness (slightly limited)	1.00 0.12	Very limited: cutbanks cave (very limited) wetness (very limited) flooding (moderately limited)	1.00 1.00 0.60
66023: Sarpy-----	Not limited		Probable: possible source (bottom layer)	0.02	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Very limited: too sandy (very limited)	1.00	Very limited: cutbanks cave (very limited) flooding (moderately limited)	1.00 0.60
66024: Wilbur-----	Moderately limited: wetness (moderately limited)	0.48	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Moderately limited: wetness (moderately limited)	0.48	Very limited: wetness (very limited) flooding (moderately limited) cutbanks cave (slightly limited)	1.00 0.60 0.29

Table 15.--Construction Materials and Excavating--Continued

Map symbol and soil name	Roadfill		Source for sand		Source for gravel		Topsoil		Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66025: Jemerson-----	Very limited: low strength (very limited) shrink-swell (slightly limited)	1.00 0.12	Improbable: excess fines (thickest layer) excess fines (bottom layer)	1.00 1.00	Improbable: excess fines (bottom layer) excess fines (thickest layer)	1.00 1.00	Not limited		Moderately limited: wetness (moderately limited) cutbanks cave (slightly limited)	0.47 0.29
99000: Pits-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99003: Miscellaneous water-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 16.--Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50000: Adco-----	Not limited		Not limited		Moderately limited: erodes easily (moderately limited) droughty (slightly limited)	0.60 0.25	Moderately limited: erodes easily (moderately limited) wetness (moderately limited)	0.60 0.53	Moderately limited: erodes easily (moderately limited) wetness (moderately limited) droughty (slightly limited)	0.60 0.53 0.25
50001: Armstrong----	Moderately limited: slope (moderately limited)	0.45	Very limited: slope (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: slope (very limited) erodes easily (moderately limited) percs slowly (moderately limited)	1.00 0.60 0.39	Moderately limited: erodes easily (moderately limited) slope (moderately limited) wetness (moderately limited)	0.60 0.45 0.44	Moderately limited: erodes easily (moderately limited) slope (moderately limited) wetness (moderately limited)	0.60 0.45 0.44
50002: Keswick-----	Moderately limited: slope (moderately limited)	0.30	Limited: slope (limited) percs slowly (moderately limited)	0.98 0.39	Limited: slope (limited) erodes easily (moderately limited) percs slowly (moderately limited)	0.98 0.60 0.39	Moderately limited: erodes easily (moderately limited) wetness (moderately limited) slope (moderately limited)	0.60 0.44 0.30	Moderately limited: erodes easily (moderately limited) wetness (moderately limited) slope (moderately limited)	0.60 0.44 0.30
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50003: Mexico-----	Not limited		Slightly limited: percs slowly (slightly limited)	0.13	Limited: droughty (limited) erodes easily (moderately limited) percs slowly (slightly limited)	0.79 0.60 0.13	Moderately limited: erodes easily (moderately limited) wetness (moderately limited)	0.60 0.53	Limited: droughty (limited) erodes easily (moderately limited) wetness (moderately limited)	0.79 0.60 0.53

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50004: Mexico-----	Not limited		Not limited		Very limited: droughty (very limited) erodes easily (moderately limited)	1.00 0.60	Moderately limited: erodes easily (moderately limited) wetness (moderately limited)	0.60 0.53	Very limited: droughty (very limited) erodes easily (moderately limited) wetness (moderately limited)	1.00 0.60 0.53
50005: Mexico-----	Not limited		Slightly limited: percs slowly (slightly limited)	0.13	Limited: droughty (limited) erodes easily (moderately limited) percs slowly (slightly limited)	0.79 0.60 0.13	Moderately limited: erodes easily (moderately limited) wetness (moderately limited)	0.60 0.53	Limited: droughty (limited) erodes easily (moderately limited) wetness (moderately limited)	0.79 0.60 0.53
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50006: Vanmeter-----	Limited: depth to bedrock (limited) slope (moderately limited)	0.95 0.60	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (limited)	1.00 1.00 0.76	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (limited)	1.00 1.00 0.76	Very limited: depth to bedrock (very limited) slope (moderately limited)	1.00 0.60	Limited: depth to bedrock (limited) slope (moderately limited) droughty (slightly limited)	0.95 0.60 0.01
50007: Vanmeter-----	Very limited: slope (very limited) depth to bedrock (limited)	1.00 0.95	Very limited: slope (very limited) percs slowly (very limited) depth to bedrock (limited)	1.00 1.00 0.76	Very limited: slope (very limited) percs slowly (very limited) depth to bedrock (limited)	1.00 1.00 0.76	Very limited: slope (very limited) depth to bedrock (very limited)	1.00 1.00	Very limited: slope (very limited) depth to bedrock (limited) droughty (slightly limited)	1.00 0.95 0.28
50008: Keswick-----	Moderately limited: slope (moderately limited)	0.30	Limited: slope (limited) percs slowly (moderately limited)	0.98 0.39	Limited: slope (limited) erodes easily (moderately limited) percs slowly (moderately limited)	0.98 0.60 0.39	Moderately limited: erodes easily (moderately limited) wetness (moderately limited) slope (moderately limited)	0.60 0.44 0.30	Moderately limited: erodes easily (moderately limited) wetness (moderately limited) slope (moderately limited)	0.60 0.44 0.30

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50009: Keswick-----	Limited: slope (limited)	0.99	Very limited: slope (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: slope (very limited) erodes easily (moderately limited) percs slowly (moderately limited)	1.00 0.60 0.39	Limited: slope (limited) erodes easily (moderately limited) wetness (moderately limited)	0.99 0.60 0.44	Limited: slope (limited) erodes easily (moderately limited) wetness (moderately limited)	0.99 0.60 0.44
50010: Winnegan-----	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: slope (very limited) erodes easily (moderately limited) percs slowly (moderately limited)	1.00 0.60 0.39	Very limited: slope (very limited) erodes easily (moderately limited) wetness (slightly limited)	1.00 0.60 0.13	Very limited: slope (very limited) erodes easily (moderately limited) wetness (slightly limited)	1.00 0.60 0.13
50011: Winnegan-----	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: slope (very limited) percs slowly (moderately limited)	1.00 0.39	Very limited: slope (very limited) wetness (slightly limited)	1.00 0.13	Very limited: slope (very limited) wetness (slightly limited)	1.00 0.13
50012: Putnam-----	Not limited		Not limited		Limited: droughty (limited) erodes easily (moderately limited)	0.67 0.60	Limited: wetness (limited) erodes easily (moderately limited)	0.99 0.60	Limited: wetness (limited) droughty (limited) erodes easily (moderately limited)	0.99 0.67 0.60
60003: Menfro-----	Limited: slope (limited) seepage (moderately limited)	0.89 0.50	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) erodes easily (moderately limited)	1.00 0.60	Limited: slope (limited) erodes easily (moderately limited)	0.89 0.60	Limited: slope (limited) erodes easily (moderately limited)	0.89 0.60
60008: Menfro-----	Very limited: slope (very limited) seepage (moderately limited)	1.00 0.50	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) erodes easily (moderately limited)	1.00 0.60	Very limited: slope (very limited) erodes easily (moderately limited)	1.00 0.60	Very limited: slope (very limited) erodes easily (moderately limited)	1.00 0.60

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60009: Clinkenbeard--	Very limited: slope (very limited) depth to bedrock (limited)	1.00 0.94	Very limited: slope (very limited) large stones (very limited) large surface stones (limited)	1.00 1.00 0.99	Very limited: slope (very limited) large stones (very limited) droughty (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) large stones (very limited) depth to bedrock (very limited)	1.00 1.00 1.00	Very limited: large stones (very limited) slope (very limited) droughty (very limited)	1.00 1.00 1.00
Gasconade-----	Very limited: slope (very limited) bedrock <20 in. (very limited)	1.00 1.00	Very limited: slope (very limited) large stones (very limited) bedrock <20 in. (very limited)	1.00 1.00 1.00	Very limited: droughty (very limited) slope (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: large stones (very limited) slope (very limited) droughty (very limited)	1.00 1.00 1.00
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
60010: Arisburg-----	Not limited		Slightly limited: percs slowly (slightly limited)	0.13	Moderately limited: erodes easily (moderately limited) percs slowly (slightly limited)	0.60 0.13	Moderately limited: erodes easily (moderately limited) wetness (moderately limited)	0.60 0.44	Moderately limited: erodes easily (moderately limited) wetness (moderately limited)	0.60 0.44
60011: Arisburg-----	Moderately limited: seepage (moderately limited) slope (moderately limited)	0.50 0.30	Limited: slope (limited) percs slowly (slightly limited)	0.98 0.13	Limited: slope (limited) erodes easily (moderately limited) percs slowly (slightly limited)	0.98 0.60 0.13	Moderately limited: erodes easily (moderately limited) wetness (moderately limited) slope (moderately limited)	0.60 0.44 0.30	Moderately limited: erodes easily (moderately limited) wetness (moderately limited) slope (moderately limited)	0.60 0.44 0.30
60012: Bardley-----	Very limited: slope (very limited) depth to bedrock (limited) seepage (moderately limited)	1.00 0.77 0.50	Very limited: slope (very limited) large stones (very limited) large surface stones (limited)	1.00 1.00 0.79	Very limited: slope (very limited) large surface stones (limited) large stones (moderately limited)	1.00 0.79 0.35	Very limited: slope (very limited) depth to bedrock (very limited) large stones (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) large stones (very limited) large surface stones (limited)	1.00 1.00 0.79

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60012: Clinkenbeard--	Very limited: slope (very limited) depth to bedrock (limited)	1.00 0.92	Very limited: slope (very limited) large stones (very limited) large surface stones (limited)	1.00 1.00 0.79	Very limited: slope (very limited) large stones (very limited) droughty (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) large stones (very limited) depth to bedrock (very limited)	1.00 1.00 1.00	Very limited: large stones (very limited) slope (very limited) droughty (very limited)	1.00 1.00 1.00
60019: Hatton-----	Slightly limited: slope (slightly limited)	0.10	Very limited: percs slowly (very limited) slope (moderately limited)	1.00 0.40	Very limited: percs slowly (very limited) erodes easily (moderately limited) slope (moderately limited)	1.00 0.60 0.40	Moderately limited: erodes easily (moderately limited) wetness (slightly limited) slope (slightly limited)	0.60 0.28 0.10	Moderately limited: erodes easily (moderately limited) wetness (slightly limited) slope (slightly limited)	0.60 0.28 0.10
60020: Lenzburg-----	Slightly limited: slope (slightly limited)	0.20	Limited: slope (limited) large stones (moderately limited) percs slowly (slightly limited)	0.78 0.51 0.13	Limited: slope (limited) slow intake (moderately limited) percs slowly (slightly limited)	0.78 0.60 0.13	Moderately limited: large stones (moderately limited) slope (slightly limited)	0.35 0.20	Moderately limited: large stones (moderately limited) slope (slightly limited)	0.35 0.20
60021: Lenzburg-----	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) large stones (slightly limited) percs slowly (slightly limited)	1.00 0.30 0.13	Very limited: slope (very limited) slow intake (moderately limited) percs slowly (slightly limited)	1.00 0.60 0.13	Very limited: slope (very limited) large stones (limited)	1.00 0.95	Very limited: slope (very limited) large stones (limited)	1.00 0.95
60022: Leonard-----	Not limited		Moderately limited: percs slowly (moderately limited) slope (slightly limited)	0.39 0.10	Moderately limited: erodes easily (moderately limited) percs slowly (moderately limited) slope (slightly limited)	0.60 0.39 0.10	Limited: wetness (limited) erodes easily (moderately limited)	0.81 0.60	Limited: wetness (limited) erodes easily (moderately limited)	0.81 0.60

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60023: Marion-----	Not limited		Not limited		Very limited: droughty (very limited) erodes easily (moderately limited)	0.99 0.60	Moderately limited: erodes easily (moderately limited) wetness (moderately limited)	0.60 0.60	Very limited: droughty (very limited) erodes easily (moderately limited) wetness (moderately limited)	0.99 0.60 0.60
60024: Menfro-----	Moderately limited: seepage (moderately limited) slope (slightly limited)	0.50 0.10	Moderately limited: slope (moderately limited)	0.40	Moderately limited: erodes easily (moderately limited) slope (moderately limited)	0.60 0.40	Moderately limited: erodes easily (moderately limited) slope (slightly limited)	0.60 0.10	Moderately limited: erodes easily (moderately limited) slope (slightly limited)	0.60 0.10
60025: Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
Harvester-----	Moderately limited: seepage (moderately limited)	0.50	Slightly limited: percs slowly (slightly limited)	0.13	Moderately limited: erodes easily (moderately limited) slow intake (moderately limited) percs slowly (slightly limited)	0.60 0.60 0.13	Moderately limited: erodes easily (moderately limited)	0.60	Moderately limited: erodes easily (moderately limited)	0.60
60026: Weller-----	Moderately limited: seepage (moderately limited)	0.50	Not limited		Very limited: droughty (very limited) erodes easily (moderately limited)	1.00 0.60	Moderately limited: erodes easily (moderately limited)	0.60	Very limited: droughty (very limited) erodes easily (moderately limited)	1.00 0.60
60027: Weller-----	Not limited		Not limited		Limited: droughty (limited) erodes easily (moderately limited)	0.83 0.60	Moderately limited: erodes easily (moderately limited)	0.60	Limited: droughty (limited) erodes easily (moderately limited)	0.83 0.60

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60028: Weller-----	Moderately limited: slope (moderately limited)	0.30	Limited: slope (limited)	0.98	Limited: slope (limited) droughty (limited) erodes easily (moderately limited)	0.98 0.87 0.60	Moderately limited: erodes easily (moderately limited) slope (moderately limited)	0.60 0.30	Limited: droughty (limited) erodes easily (moderately limited) slope (moderately limited)	0.87 0.60 0.30
60029: Weller-----	Moderately limited: slope (moderately limited)	0.30	Limited: slope (limited)	0.98	Limited: slope (limited) droughty (limited) erodes easily (moderately limited)	0.98 0.87 0.60	Moderately limited: erodes easily (moderately limited) slope (moderately limited)	0.60 0.30	Limited: droughty (limited) erodes easily (moderately limited) slope (moderately limited)	0.87 0.60 0.30
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60030: Winfield-----	Moderately limited: slope (moderately limited) seepage (moderately limited)	0.60 0.50	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) erodes easily (moderately limited)	1.00 0.60	Moderately limited: slope (moderately limited) erodes easily (moderately limited) wetness (slightly limited)	0.60 0.60 0.28	Moderately limited: slope (moderately limited) erodes easily (moderately limited) wetness (slightly limited)	0.60 0.60 0.28
60031: Winfield-----	Limited: slope (limited) seepage (moderately limited)	0.89 0.50	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) erodes easily (moderately limited)	1.00 0.60	Limited: slope (limited) erodes easily (moderately limited)	0.89 0.60	Limited: slope (limited) erodes easily (moderately limited)	0.89 0.60
60032: Winfield-----	Very limited: slope (very limited) seepage (moderately limited)	1.00 0.50	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) erodes easily (moderately limited)	1.00 0.60	Very limited: slope (very limited) erodes easily (moderately limited) wetness (moderately limited)	1.00 0.60 0.39	Very limited: slope (very limited) erodes easily (moderately limited) wetness (moderately limited)	1.00 0.60 0.39

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60033: Wrengart-----	Moderately limited: seepage (moderately limited) slope (moderately limited)	0.50 0.30	Limited: slope (limited)	0.98	Limited: slope (limited) erodes easily (moderately limited)	0.98 0.60	Moderately limited: erodes easily (moderately limited) slope (moderately limited) wetness (slightly limited)	0.60 0.30 0.13	Moderately limited: erodes easily (moderately limited) slope (moderately limited) wetness (slightly limited)	0.60 0.30 0.13
60034: Wrengart-----	Limited: slope (limited) seepage (moderately limited)	0.80 0.50	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) erodes easily (moderately limited)	1.00 0.60	Limited: slope (limited) erodes easily (moderately limited) wetness (moderately limited)	0.80 0.60 0.44	Limited: slope (limited) erodes easily (moderately limited) wetness (moderately limited)	0.80 0.60 0.44
60035: Wrengart-----	Limited: slope (limited) seepage (moderately limited)	0.80 0.50	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) erodes easily (moderately limited)	1.00 0.60	Limited: slope (limited) erodes easily (moderately limited) wetness (moderately limited)	0.80 0.60 0.44	Limited: slope (limited) erodes easily (moderately limited) wetness (moderately limited)	0.80 0.60 0.44
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60036: Menfro-----	Very limited: slope (very limited) seepage (moderately limited)	1.00 0.50	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) erodes easily (moderately limited)	1.00 0.60	Very limited: slope (very limited) erodes easily (moderately limited)	1.00 0.60	Very limited: slope (very limited) erodes easily (moderately limited)	1.00 0.60
60037: Wrengart-----	Limited: slope (limited) seepage (moderately limited)	0.99 0.50	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) erodes easily (moderately limited)	1.00 0.60	Limited: slope (limited) erodes easily (moderately limited) wetness (slightly limited)	0.99 0.60 0.13	Limited: slope (limited) erodes easily (moderately limited) wetness (slightly limited)	0.99 0.60 0.13

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60038: Rocheport-----	Very limited: slope (very limited) depth to bedrock (moderately limited) seepage (moderately limited)	1.00 0.60 0.50	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.13	Very limited: slope (very limited) erodes easily (moderately limited) percs slowly (slightly limited)	1.00 0.60 0.13	Very limited: slope (very limited) erodes easily (moderately limited) depth to bedrock (moderately limited)	1.00 0.60 0.51	Very limited: slope (very limited) erodes easily (moderately limited) depth to bedrock (moderately limited)	1.00 0.60 0.60
Bonnefemme----	Very limited: slope (very limited) depth to bedrock (limited)	1.00 0.88	Very limited: slope (very limited) depth to bedrock (moderately limited) percs slowly (slightly limited)	1.00 0.42 0.17	Very limited: slope (very limited) erodes easily (moderately limited) depth to bedrock (moderately limited)	1.00 0.60 0.42	Very limited: slope (very limited) depth to bedrock (very limited) erodes easily (moderately limited)	1.00 1.00 0.60	Very limited: slope (very limited) depth to bedrock (limited) erodes easily (moderately limited)	1.00 0.88 0.60
60039: Rocheport-----	Very limited: slope (very limited) depth to bedrock (limited) seepage (moderately limited)	1.00 0.63 0.50	Very limited: slope (very limited) percs slowly (slightly limited)	1.00 0.18	Very limited: slope (very limited) erodes easily (moderately limited) percs slowly (slightly limited)	1.00 0.60 0.18	Very limited: slope (very limited) erodes easily (moderately limited) depth to bedrock (moderately limited)	1.00 0.60 0.57	Very limited: slope (very limited) depth to bedrock (limited) erodes easily (moderately limited)	1.00 0.63 0.60
Bonnefemme----	Very limited: slope (very limited) depth to bedrock (limited)	1.00 0.73	Very limited: slope (very limited) percs slowly (slightly limited) depth to bedrock (slightly limited)	1.00 0.13 0.03	Very limited: slope (very limited) percs slowly (slightly limited) depth to bedrock (slightly limited)	1.00 0.13 0.03	Very limited: slope (very limited) depth to bedrock (very limited)	1.00 1.00	Very limited: slope (very limited) depth to bedrock (limited)	1.00 0.73
64002: Freeburg-----	Not limited		Slightly limited: percs slowly (slightly limited)	0.13	Moderately limited: erodes easily (moderately limited) percs slowly (slightly limited)	0.60 0.13	Limited: wetness (limited) erodes easily (moderately limited)	0.94 0.60	Limited: wetness (limited) erodes easily (moderately limited)	0.94 0.60

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
64004: Auxvasse-----	Not limited		Not limited		Limited: droughty (limited) erodes easily (moderately limited)	0.62 0.60	Moderately limited: erodes easily (moderately limited) wetness (moderately limited)	0.60 0.60	Limited: droughty (limited) erodes easily (moderately limited) wetness (moderately limited)	0.62 0.60 0.60
64005: Moniteau-----	Not limited		Moderately limited: flooding (moderately limited) percs slowly (slightly limited)	0.60 0.13	Moderately limited: flooding (moderately limited) erodes easily (moderately limited) percs slowly (slightly limited)	0.60 0.60 0.13	Very limited: wetness (very limited) erodes easily (moderately limited)	1.00 0.60	Very limited: wetness (very limited) erodes easily (moderately limited)	1.00 0.60
64006: Tanglenook----	Not limited		Moderately limited: percs slowly (moderately limited) slope (slightly limited)	0.39 0.10	Moderately limited: erodes easily (moderately limited) percs slowly (moderately limited) slope (slightly limited)	0.60 0.39 0.10	Very limited: wetness (very limited) erodes easily (moderately limited)	1.00 0.60	Very limited: wetness (very limited) erodes easily (moderately limited)	1.00 0.60
66007: Leta-----	Moderately limited: seepage (moderately limited)	0.50	Moderately limited: flooding (moderately limited) percs slowly (moderately limited)	0.60 0.39	Limited: slow intake (limited) flooding (moderately limited) percs slowly (moderately limited)	0.64 0.60 0.39	Moderately limited: wetness (moderately limited)	0.44	Moderately limited: wetness (moderately limited)	0.44
66014: Haymond-----	Moderately limited: seepage (moderately limited)	0.50	Limited: flooding (limited)	0.90	Limited: flooding (limited) erodes easily (moderately limited)	0.90 0.60	Moderately limited: erodes easily (moderately limited)	0.60	Moderately limited: erodes easily (moderately limited)	0.60

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66015: Blake-----	Moderately limited: seepage (moderately limited)	0.50	Moderately limited: flooding (moderately limited)	0.60	Moderately limited: flooding (moderately limited) erodes easily (moderately limited)	0.60 0.60	Moderately limited: erodes easily (moderately limited)	0.60	Moderately limited: erodes easily (moderately limited)	0.60
66016: Blake-----	Moderately limited: seepage (moderately limited)	0.50	Limited: flooding (limited)	0.90	Limited: flooding (limited) slow intake (moderately limited)	0.90 0.60	Not limited		Not limited	
66017: Cedargap-----	Moderately limited: seepage (moderately limited)	0.50	Very limited: large stones (very limited) flooding (limited)	1.00 0.90	Limited: flooding (limited) large stones (slightly limited) droughty (slightly limited)	0.90 0.28 0.03	Very limited: large stones (very limited)	1.00	Very limited: large stones (very limited) droughty (slightly limited)	1.00 0.03
Dameron-----	Moderately limited: seepage (moderately limited)	0.50	Limited: flooding (limited) large stones (slightly limited)	0.90 0.30	Limited: flooding (limited)	0.90	Not limited		Not limited	
66018: Darwin-----	Not limited		Very limited: percs slowly (very limited) flooding (moderately limited)	1.00 0.60	Very limited: percs slowly (very limited) flooding (moderately limited) erodes easily (moderately limited)	1.00 0.60 0.60	Very limited: wetness (very limited) erodes easily (moderately limited)	1.00 0.60	Very limited: wetness (very limited) erodes easily (moderately limited)	1.00 0.60
66019: Haynie-----	Moderately limited: seepage (moderately limited)	0.50	Moderately limited: flooding (moderately limited)	0.60	Moderately limited: flooding (moderately limited) erodes easily (moderately limited)	0.60 0.60	Moderately limited: erodes easily (moderately limited)	0.60	Moderately limited: erodes easily (moderately limited)	0.60

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66020: Haynie-----	Moderately limited: seepage (moderately limited)	0.50	Limited: flooding (limited)	0.90	Limited: flooding (limited) erodes easily (moderately limited)	0.90 0.60	Moderately limited: erodes easily (moderately limited)	0.60	Moderately limited: erodes easily (moderately limited)	0.60
66021: Perche-----	Moderately limited: seepage (moderately limited)	0.50	Limited: flooding (limited)	0.90	Limited: flooding (limited) erodes easily (moderately limited)	0.90 0.60	Moderately limited: erodes easily (moderately limited) wetness (moderately limited)	0.60 0.44	Moderately limited: erodes easily (moderately limited) wetness (moderately limited)	0.60 0.44
66022: Sandover-----	Very limited: seepage (very limited)	1.00	Moderately limited: flooding (moderately limited)	0.60	Very limited: fast intake (very limited) flooding (moderately limited)	1.00 0.60	Slightly limited: wetness (slightly limited)	0.28	Slightly limited: wetness (slightly limited)	0.28
66023: Sarpy-----	Very limited: seepage (very limited)	1.00	Limited: cutbanks cave (limited) flooding (moderately limited)	0.90 0.60	Very limited: fast intake (very limited) droughty (limited) flooding (moderately limited)	1.00 0.69 0.60	Very limited: too sandy (very limited)	1.00	Limited: droughty (limited)	0.69
66024: Wilbur-----	Moderately limited: seepage (moderately limited)	0.50	Limited: flooding (limited)	0.90	Limited: flooding (limited) erodes easily (moderately limited)	0.90 0.60	Moderately limited: erodes easily (moderately limited) wetness (moderately limited)	0.60 0.44	Moderately limited: erodes easily (moderately limited) wetness (moderately limited)	0.60 0.44
66025: Jemerson-----	Moderately limited: seepage (moderately limited)	0.50	Not limited		Moderately limited: erodes easily (moderately limited)	0.60	Moderately limited: erodes easily (moderately limited)	0.60	Moderately limited: erodes easily (moderately limited)	0.60
99000: Pits-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 16.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Drainage		Irrigation		Terraces and diversions		Grassed waterways	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99003: Miscellaneous water-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 17.--Waste Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50000: Adco-----	Moderately limited: wetness (moderately limited) droughty (slightly limited)	0.53 0.25	Moderately limited: wetness (moderately limited) droughty (slightly limited)	0.53 0.25	Moderately limited: wetness (moderately limited) droughty (slightly limited)	0.53 0.25	Moderately limited: wetness (moderately limited)	0.53	Very limited: percs slowly (very limited) wetness (very limited) too acid (slightly limited)	1.00 1.00 0.14
50001: Armstrong----	Limited: percs slowly (limited) wetness (moderately limited) slope (slightly limited)	0.99 0.44 0.15	Limited: percs slowly (limited) wetness (moderately limited) slope (slightly limited)	0.99 0.44 0.15	Limited: percs slowly (limited) slope (moderately limited) wetness (moderately limited)	0.99 0.45 0.44	Limited: percs slowly (limited) slope (moderately limited) wetness (moderately limited)	0.99 0.45 0.44	Very limited: percs slowly (very limited) wetness (very limited) slope (very limited)	1.00 1.00 1.00
50002: Keswick-----	Limited: percs slowly (limited) wetness (moderately limited)	0.99 0.44	Limited: percs slowly (limited) wetness (moderately limited)	0.99 0.44	Limited: percs slowly (limited) wetness (moderately limited) slope (moderately limited)	0.99 0.44 0.30	Limited: percs slowly (limited) wetness (moderately limited) slope (moderately limited)	0.99 0.44 0.30	Very limited: percs slowly (very limited) wetness (very limited) slope (limited)	1.00 1.00 0.91
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50003: Mexico-----	Limited: droughty (limited) wetness (moderately limited)	0.79 0.53	Limited: droughty (limited) wetness (moderately limited)	0.79 0.53	Limited: droughty (limited) wetness (moderately limited)	0.79 0.53	Moderately limited: wetness (moderately limited)	0.53	Very limited: percs slowly (very limited) wetness (very limited)	1.00 1.00
50004: Mexico-----	Very limited: droughty (very limited) wetness (moderately limited)	1.00 0.53	Very limited: droughty (very limited) wetness (moderately limited)	1.00 0.53	Very limited: droughty (very limited) wetness (moderately limited)	1.00 0.53	Moderately limited: wetness (moderately limited)	0.53	Very limited: wetness (very limited) too acid (slightly limited)	1.00 0.01

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50005: Mexico-----	Limited: droughty (limited) wetness (moderately limited)	0.79 0.53	Limited: droughty (limited) wetness (moderately limited)	0.79 0.53	Limited: droughty (limited) wetness (moderately limited)	0.79 0.53	Moderately limited: wetness (moderately limited)	0.53	Very limited: percs slowly (very limited) wetness (very limited)	1.00 1.00
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
50006: Vanmeter-----	Limited: depth to bedrock (limited) percs slowly (limited) slope (moderately limited)	0.76 0.60 0.30	Limited: depth to bedrock (limited) percs slowly (limited) slope (moderately limited)	0.76 0.60 0.30	Limited: depth to bedrock (limited) percs slowly (limited) slope (moderately limited)	0.76 0.60 0.60	Very limited: depth to bedrock (very limited) percs slowly (limited) slope (moderately limited)	1.00 0.60 0.60	Very limited: percs slowly (very limited) depth to bedrock (very limited) slope (very limited)	1.00 1.00 1.00
50007: Vanmeter-----	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (limited)	1.00 1.00 0.76	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (limited)	1.00 1.00 0.76	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (limited)	1.00 1.00 0.76	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00
50008: Keswick-----	Limited: percs slowly (limited) wetness (moderately limited)	0.99 0.44	Limited: percs slowly (limited) wetness (moderately limited)	0.99 0.44	Limited: percs slowly (limited) wetness (moderately limited) slope (moderately limited)	0.99 0.44 0.30	Limited: percs slowly (limited) wetness (moderately limited) slope (moderately limited)	0.99 0.44 0.30	Very limited: percs slowly (very limited) wetness (very limited) slope (limited)	1.00 1.00 0.91
50009: Keswick-----	Limited: percs slowly (limited) slope (limited) wetness (moderately limited)	0.99 0.76 0.44	Limited: percs slowly (limited) slope (limited) wetness (moderately limited)	0.99 0.76 0.44	Limited: slope (limited) percs slowly (limited) wetness (moderately limited)	0.99 0.99 0.44	Limited: slope (limited) percs slowly (limited) wetness (moderately limited)	0.99 0.99 0.44	Very limited: percs slowly (very limited) slope (very limited) wetness (very limited)	1.00 1.00 1.00

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
50010: Winnegan-----	Very limited: slope (very limited) percs slowly (limited) wetness (slightly limited)	1.00 0.99 0.13	Very limited: slope (very limited) percs slowly (limited) wetness (slightly limited)	1.00 0.99 0.13	Very limited: slope (very limited) percs slowly (limited) wetness (slightly limited)	1.00 0.99 0.13	Very limited: slope (very limited) percs slowly (limited) wetness (slightly limited)	1.00 0.99 0.13	Very limited: percs slowly (very limited) slope (very limited) wetness (very limited)	1.00 1.00 1.00
50011: Winnegan-----	Very limited: slope (very limited) percs slowly (limited) wetness (slightly limited)	1.00 0.99 0.13	Very limited: slope (very limited) percs slowly (limited) wetness (slightly limited)	1.00 0.99 0.13	Very limited: slope (very limited) percs slowly (limited) wetness (slightly limited)	1.00 0.99 0.13	Very limited: slope (very limited) percs slowly (limited) wetness (slightly limited)	1.00 0.99 0.13	Very limited: percs slowly (very limited) slope (very limited) wetness (very limited)	1.00 1.00 1.00
50012: Putnam-----	Limited: wetness (limited) droughty (limited)	0.99 0.67	Limited: wetness (limited) droughty (limited)	0.99 0.67	Limited: wetness (limited) droughty (limited)	0.99 0.67	Limited: wetness (limited)	0.99	Very limited: percs slowly (very limited) wetness (very limited) too acid (moderately limited)	1.00 1.00 0.31
60003: Menfro-----	Limited: slope (limited)	0.68	Limited: slope (limited)	0.68	Limited: slope (limited)	0.89	Limited: slope (limited)	0.89	Very limited: percs slowly (very limited) slope (very limited)	1.00 1.00
60008: Menfro-----	Very limited: slope (very limited)	1.00	Very limited: slope (very limited)	1.00	Very limited: slope (very limited)	1.00	Very limited: slope (very limited)	1.00	Very limited: percs slowly (very limited) slope (very limited) too acid (slightly limited)	1.00 1.00 0.01

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60009:										
Clinkenbeard--	Very limited: slope (very limited) droughty (very limited) large stones >35% (very limited)	1.00 1.00 0.99	Very limited: slope (very limited) droughty (very limited) large stones >35% (very limited)	1.00 1.00 0.99	Very limited: slope (very limited) droughty (very limited) large stones >35% (very limited)	1.00 1.00 0.99	Very limited: slope (very limited) depth to bedrock (very limited) large stones >35% (very limited)	1.00 1.00 0.99	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00
Gasconade-----	Very limited: slope (very limited) droughty (very limited) bedrock <20 in. (very limited)	1.00 1.00 1.00	Very limited: droughty (very limited) slope (very limited) bedrock <20 in. (very limited)	1.00 1.00 1.00	Very limited: droughty (very limited) slope (very limited) bedrock <20 in. (very limited)	1.00 1.00 1.00	Very limited: depth to bedrock (very limited) slope (very limited) large stones >35% (very limited)	1.00 1.00 0.99	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00
Rock outcrop--	Not rated		Not rated		Not rated		Not rated		Not rated	
60010:										
Arisburg-----	Limited: percs slowly (limited) wetness (moderately limited)	0.60 0.44	Limited: percs slowly (limited) wetness (moderately limited)	0.60 0.44	Limited: percs slowly (limited) wetness (moderately limited)	0.60 0.44	Limited: percs slowly (limited) wetness (moderately limited)	0.60 0.44	Very limited: percs slowly (very limited) wetness (very limited)	1.00 1.00
60011:										
Arisburg-----	Limited: percs slowly (limited) wetness (moderately limited)	0.60 0.44	Limited: percs slowly (limited) wetness (moderately limited)	0.60 0.44	Limited: percs slowly (limited) wetness (moderately limited) slope (moderately limited)	0.60 0.44 0.30	Limited: percs slowly (limited) wetness (moderately limited) slope (moderately limited)	0.60 0.44 0.30	Very limited: percs slowly (very limited) wetness (very limited) slope (limited)	1.00 1.00 0.91
60012:										
Bardley-----	Very limited: slope (very limited) large surface stones (limited) large stones (moderately limited)	1.00 0.79 0.30	Very limited: slope (very limited) large surface stones (limited) large stones (moderately limited)	1.00 0.79 0.30	Very limited: slope (very limited) large surface stones (limited) large stones (moderately limited)	1.00 0.79 0.30	Very limited: slope (very limited) depth to bedrock (very limited) large surface stones (limited)	1.00 1.00 0.79	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60012: Clinkenbeard--	Very limited: slope (very limited) large stones >35% (very limited) droughty (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) large stones >35% (very limited) droughty (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) large stones >35% (very limited) droughty (very limited)	1.00 1.00 1.00	Very limited: slope (very limited) depth to bedrock (very limited) large stones >35% (very limited)	1.00 1.00 1.00	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00
60019: Hatton-----	Very limited: percs slowly (very limited) wetness (slightly limited)	1.00 0.28	Very limited: percs slowly (very limited) wetness (slightly limited)	1.00 0.28	Very limited: percs slowly (very limited) wetness (slightly limited) slope (slightly limited)	1.00 0.28 0.10	Very limited: percs slowly (very limited) wetness (slightly limited) slope (slightly limited)	1.00 0.28 0.10	Very limited: percs slowly (very limited) wetness (very limited) slope (moderately limited)	1.00 1.00 0.31
60020: Lenzburg-----	Limited: percs slowly (limited)	0.60	Limited: percs slowly (limited)	0.60	Limited: percs slowly (limited) slope (slightly limited)	0.60 0.20	Limited: percs slowly (limited) slope (slightly limited)	0.60 0.20	Very limited: percs slowly (very limited) slope (limited)	1.00 0.66
60021: Lenzburg-----	Very limited: slope (very limited) percs slowly (limited)	1.00 0.60	Very limited: slope (very limited) percs slowly (limited)	1.00 0.60	Very limited: slope (very limited) percs slowly (limited)	1.00 0.60	Very limited: slope (very limited) percs slowly (limited)	1.00 0.60	Very limited: percs slowly (very limited) slope (very limited) too cobbly (slightly limited)	1.00 1.00 0.01
60022: Leonard-----	Limited: percs slowly (limited) wetness (limited)	0.99 0.81	Limited: percs slowly (limited) wetness (limited)	0.99 0.81	Limited: percs slowly (limited) wetness (limited)	0.99 0.81	Limited: percs slowly (limited) wetness (limited)	0.99 0.81	Very limited: percs slowly (very limited) wetness (very limited) slope (slightly limited)	1.00 1.00 0.08

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60023: Marion-----	Very limited: droughty (very limited) wetness (moderately limited) too acid (moderately limited)	0.99 0.60 0.48	Very limited: droughty (very limited) wetness (moderately limited) too acid (moderately limited)	0.99 0.60 0.48	Very limited: droughty (very limited) wetness (moderately limited) too acid (moderately limited)	0.99 0.60 0.48	Moderately limited: wetness (moderately limited) too acid (moderately limited)	0.60 0.48	Very limited: percs slowly (very limited) wetness (very limited) too acid (slightly limited)	1.00 1.00 0.21
60024: Menfro-----	Not limited		Not limited		Slightly limited: slope (slightly limited)	0.10	Slightly limited: slope (slightly limited)	0.10	Very limited: percs slowly (very limited) slope (moderately limited)	1.00 0.31
60025: Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
Harvester-----	Limited: percs slowly (limited) too acid (slightly limited)	0.60 0.24	Limited: percs slowly (limited) too acid (slightly limited)	0.60 0.24	Limited: percs slowly (limited) too acid (slightly limited)	0.60 0.24	Limited: percs slowly (limited) too acid (slightly limited)	0.60 0.24	Very limited: percs slowly (very limited)	1.00
60026: Weller-----	Very limited: droughty (very limited)	1.00	Very limited: droughty (very limited)	1.00	Very limited: droughty (very limited)	1.00	Not limited		Very limited: wetness (very limited)	1.00
60027: Weller-----	Limited: droughty (limited)	0.83	Limited: droughty (limited)	0.83	Limited: droughty (limited)	0.83	Not limited		Very limited: percs slowly (very limited) wetness (very limited)	1.00 1.00
60028: Weller-----	Limited: droughty (limited)	0.87	Limited: droughty (limited)	0.87	Limited: droughty (limited) slope (moderately limited)	0.87 0.30	Moderately limited: slope (moderately limited)	0.30	Very limited: percs slowly (very limited) wetness (very limited) slope (limited)	1.00 1.00 0.91

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60029: Weller-----	Limited: droughty (limited)	0.87	Limited: droughty (limited)	0.87	Limited: droughty (limited) slope (moderately limited)	0.87 0.30	Moderately limited: slope (moderately limited)	0.30	Very limited: percs slowly (very limited) wetness (very limited) slope (limited)	1.00 1.00 0.91
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60030: Winfield-----	Moderately limited: slope (moderately limited) wetness (slightly limited)	0.30 0.28	Moderately limited: slope (moderately limited) wetness (slightly limited)	0.30 0.28	Moderately limited: slope (moderately limited) wetness (slightly limited)	0.60 0.28	Moderately limited: slope (moderately limited) wetness (slightly limited)	0.60 0.28	Very limited: percs slowly (very limited) wetness (very limited) slope (very limited)	1.00 1.00 1.00
60031: Winfield-----	Limited: slope (limited)	0.68	Limited: slope (limited)	0.68	Limited: slope (limited)	0.89	Limited: slope (limited)	0.89	Very limited: percs slowly (very limited) slope (very limited) wetness (very limited)	1.00 1.00 1.00
60032: Winfield-----	Very limited: slope (very limited) wetness (moderately limited)	1.00 0.39	Very limited: slope (very limited) wetness (moderately limited)	1.00 0.39	Very limited: slope (very limited) wetness (moderately limited)	1.00 0.39	Very limited: slope (very limited) wetness (moderately limited)	1.00 0.39	Very limited: percs slowly (very limited) slope (very limited) wetness (very limited)	1.00 1.00 1.00
60033: Wrengart-----	Slightly limited: wetness (slightly limited)	0.13	Slightly limited: wetness (slightly limited)	0.13	Moderately limited: slope (moderately limited) wetness (slightly limited)	0.30 0.13	Moderately limited: slope (moderately limited) wetness (slightly limited)	0.30 0.13	Very limited: percs slowly (very limited) wetness (very limited) slope (limited)	1.00 1.00 0.91

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60034: Wrengart-----	Moderately limited: slope (moderately limited) wetness (moderately limited)	0.60 0.44	Moderately limited: slope (moderately limited) wetness (moderately limited)	0.60 0.44	Limited: slope (limited) wetness (moderately limited)	0.80 0.44	Limited: slope (limited) wetness (moderately limited)	0.80 0.44	Very limited: percs slowly (very limited) wetness (very limited) slope (very limited)	1.00 1.00 1.00
60035: Wrengart-----	Moderately limited: slope (moderately limited) wetness (moderately limited)	0.60 0.44	Moderately limited: slope (moderately limited) wetness (moderately limited)	0.60 0.44	Limited: slope (limited) wetness (moderately limited)	0.80 0.44	Limited: slope (limited) wetness (moderately limited)	0.80 0.44	Very limited: percs slowly (very limited) wetness (very limited) slope (very limited)	1.00 1.00 1.00
Urban land----	Not rated		Not rated		Not rated		Not rated		Not rated	
60036: Menfro-----	Not limited		Not limited		Very limited: slope (very limited)	1.00	Very limited: slope (very limited)	1.00	Very limited: percs slowly (very limited) slope (very limited)	1.00 1.00
60037: Wrengart-----	Limited: slope (limited) wetness (slightly limited) too acid (slightly limited)	0.76 0.13 0.12	Limited: slope (limited) wetness (slightly limited) too acid (slightly limited)	0.76 0.13 0.12	Limited: slope (limited) wetness (slightly limited) too acid (slightly limited)	0.99 0.13 0.12	Limited: slope (limited) wetness (slightly limited) too acid (slightly limited)	0.99 0.13 0.12	Very limited: percs slowly (very limited) slope (very limited) wetness (very limited)	1.00 1.00 1.00
60038: Rocheport-----	Very limited: slope (very limited)	1.00	Very limited: slope (very limited)	1.00	Very limited: slope (very limited)	1.00	Very limited: slope (very limited) depth to bedrock (moderately limited)	1.00 0.51	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
60038: Bonnefemme----	Very limited: slope (very limited) percs slowly (limited) depth to bedrock (moderately limited)	1.00 0.60 0.42	Very limited: slope (very limited) percs slowly (limited) depth to bedrock (moderately limited)	1.00 0.60 0.42	Very limited: slope (very limited) percs slowly (limited) depth to bedrock (moderately limited)	1.00 0.60 0.42	Very limited: slope (very limited) depth to bedrock (very limited) percs slowly (limited)	1.00 1.00 0.60	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00
60039: Rocheport-----	Very limited: slope (very limited) wetness (slightly limited) too acid (slightly limited)	1.00 0.28 0.24	Very limited: slope (very limited) wetness (slightly limited) too acid (slightly limited)	1.00 0.28 0.24	Very limited: slope (very limited) wetness (slightly limited) too acid (slightly limited)	1.00 0.28 0.24	Very limited: slope (very limited) depth to bedrock (moderately limited) wetness (slightly limited)	1.00 0.57 0.28	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00
Bonnefemme----	Very limited: slope (very limited) percs slowly (limited) depth to bedrock (slightly limited)	1.00 0.60 0.03	Very limited: slope (very limited) percs slowly (limited) depth to bedrock (slightly limited)	1.00 0.60 0.03	Very limited: slope (very limited) percs slowly (limited) depth to bedrock (slightly limited)	1.00 0.60 0.03	Very limited: slope (very limited) depth to bedrock (very limited) percs slowly (limited)	1.00 1.00 0.60	Very limited: percs slowly (very limited) slope (very limited) depth to bedrock (very limited)	1.00 1.00 1.00
64002: Freeburg-----	Limited: wetness (limited) percs slowly (limited)	0.94 0.60	Limited: wetness (limited) percs slowly (limited)	0.94 0.60	Limited: wetness (limited) percs slowly (limited)	0.94 0.60	Limited: wetness (limited) percs slowly (limited)	0.94 0.60	Very limited: percs slowly (very limited) wetness (very limited) too acid (slightly limited)	1.00 1.00 0.01
64004: Auxvasse-----	Limited: droughty (limited) wetness (moderately limited) flooding (slightly limited)	0.62 0.60 0.30	Limited: droughty (limited) wetness (moderately limited) flooding (slightly limited)	0.62 0.60 0.30	Limited: droughty (limited) wetness (moderately limited) flooding (slightly limited)	0.62 0.60 0.30	Moderately limited: wetness (moderately limited) flooding (slightly limited)	0.60 0.30	Very limited: percs slowly (very limited) wetness (very limited) too acid (slightly limited)	1.00 1.00 0.07

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
64005: Moniteau-----	Very limited: wetness (very limited) flooding (limited) percs slowly (limited)	1.00 0.90 0.60	Very limited: wetness (very limited) flooding (limited) percs slowly (limited)	1.00 0.90 0.60	Very limited: wetness (very limited) flooding (limited) percs slowly (limited)	1.00 0.90 0.60	Very limited: wetness (very limited) flooding (limited) percs slowly (limited)	1.00 0.90 0.60	Very limited: percs slowly (very limited) wetness (very limited) flooding (moderately limited)	1.00 1.00 0.60
64006: Tanglenook----	Very limited: wetness (very limited) percs slowly (limited) flooding (slightly limited)	1.00 0.99 0.30	Very limited: wetness (very limited) percs slowly (limited) flooding (slightly limited)	1.00 0.99 0.30	Very limited: wetness (very limited) percs slowly (limited) flooding (slightly limited)	1.00 0.99 0.30	Very limited: wetness (very limited) percs slowly (limited) flooding (slightly limited)	1.00 0.99 0.30	Very limited: percs slowly (very limited) wetness (very limited) slope (slightly limited)	1.00 1.00 0.08
66007: Leta-----	Limited: percs slowly (limited) flooding (limited) wetness (moderately limited)	0.99 0.90 0.44	Limited: percs slowly (limited) flooding (limited) wetness (moderately limited)	0.99 0.90 0.44	Limited: percs slowly (limited) flooding (limited) wetness (moderately limited)	0.99 0.90 0.44	Limited: percs slowly (limited) flooding (limited) wetness (moderately limited)	0.99 0.90 0.44	Very limited: percs slowly (very limited) wetness (very limited) flooding (moderately limited)	1.00 1.00 0.60
66014: Haymond-----	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: percs slowly (very limited) flooding (very limited)	1.00 1.00
66015: Blake-----	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Very limited: percs slowly (very limited) wetness (very limited) flooding (moderately limited)	1.00 1.00 0.60

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66016: Blake-----	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: percs slowly (very limited) flooding (very limited) wetness (very limited)	1.00 1.00 1.00
66017: Cedargap-----	Very limited: flooding (very limited) droughty (slightly limited)	1.00 0.03	Very limited: flooding (very limited) droughty (slightly limited)	1.00 0.03	Very limited: flooding (very limited) droughty (slightly limited)	1.00 0.03	Very limited: flooding (very limited)	1.00	Very limited: percs slowly (very limited) flooding (very limited) too cobbly (limited)	1.00 1.00 0.95
Dameron-----	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: percs slowly (very limited) flooding (very limited)	1.00 1.00
66018: Darwin-----	Very limited: percs slowly (very limited) wetness (very limited) flooding (limited)	1.00 1.00 0.90	Very limited: percs slowly (very limited) wetness (very limited) flooding (limited)	1.00 1.00 0.90	Very limited: percs slowly (very limited) wetness (very limited) flooding (limited)	1.00 1.00 0.90	Very limited: percs slowly (very limited) wetness (very limited) flooding (limited)	1.00 1.00 0.90	Very limited: percs slowly (very limited) wetness (very limited) flooding (moderately limited)	1.00 1.00 0.60
66019: Haynie-----	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Limited: flooding (limited)	0.90	Very limited: percs slowly (very limited) flooding (moderately limited)	1.00 0.60
66020: Haynie-----	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: flooding (very limited)	1.00	Very limited: percs slowly (very limited) flooding (very limited)	1.00 1.00

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
66021: Perche-----	Very limited: flooding (very limited) wetness (moderately limited)	1.00 0.44	Very limited: flooding (very limited) wetness (moderately limited)	1.00 0.44	Very limited: flooding (very limited) wetness (moderately limited)	1.00 0.44	Very limited: flooding (very limited) wetness (moderately limited)	1.00 0.44	Very limited: percs slowly (very limited) wetness (very limited) flooding (very limited)	1.00 1.00 1.00
66022: Sandoover-----	Very limited: poor filter (very limited) flooding (limited) wetness (slightly limited)	1.00 0.90 0.28	Very limited: poor filter (very limited) flooding (limited) wetness (slightly limited)	1.00 0.90 0.28	Very limited: poor filter (very limited) flooding (limited) wetness (slightly limited)	1.00 0.90 0.28	Very limited: poor filter (very limited) flooding (limited) wetness (slightly limited)	1.00 0.90 0.28	Very limited: wetness (very limited) flooding (moderately limited)	1.00 0.60
66023: Sarpy-----	Very limited: poor filter (very limited) flooding (limited) droughty (limited)	1.00 0.90 0.69	Very limited: poor filter (very limited) flooding (limited) droughty (limited)	1.00 0.90 0.69	Very limited: poor filter (very limited) flooding (limited) droughty (limited)	1.00 0.90 0.69	Very limited: poor filter (very limited) flooding (limited)	1.00 0.90	Limited: flooding (moderately limited)	0.60
66024: Wilbur-----	Very limited: flooding (very limited) wetness (moderately limited)	1.00 0.44	Very limited: flooding (very limited) wetness (moderately limited)	1.00 0.44	Very limited: flooding (very limited) wetness (moderately limited)	1.00 0.44	Very limited: flooding (very limited) wetness (moderately limited)	1.00 0.44	Very limited: percs slowly (very limited) wetness (very limited) flooding (very limited)	1.00 1.00 1.00
66025: Jemerson-----	Slightly limited: flooding (slightly limited)	0.30	Slightly limited: flooding (slightly limited)	0.30	Slightly limited: flooding (slightly limited)	0.30	Slightly limited: flooding (slightly limited)	0.30	Very limited: percs slowly (very limited) wetness (limited)	1.00 0.89
99000: Pits-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 17.--Waste Management--Continued

Map symbol and soil name	Land application of manure and food-processing waste		Land application of municipal sewage sludge		Disposal of wastewater by irrigation		Treatment of wastewater by slow rate process		Treatment of wastewater by rapid infiltration process	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
99001: Water-----	Not rated		Not rated		Not rated		Not rated		Not rated	
99003: Miscellaneous water-----	Not rated		Not rated		Not rated		Not rated		Not rated	

Table 18.--Engineering Index Properties

(Absence of an entry indicates that the data were not estimated. For an explanation of the abbreviations in the USDA texture column, see "Texture, soil" in the Glossary.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
50000:												
Adco-----	0-9	SIL	CL	A-6, A-7	0	0	100	100	95-100	95-100	30-45	13-25
	9-16	SIL, SICL	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	13-25
	16-28	SIC, C	CH	A-7	0	0	100	100	100	95-100	65-80	40-50
	28-49	SICL, SIC	CH, CL	A-7	0	0	100	100	100	90-100	45-65	25-40
	49-60	SIL, SICL, CL	CL	A-6, A-7	0	0	100	100	95-100	75-100	35-50	15-30
50001:												
Armstrong-----	0-5	L	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	80-90	20-30	5-15
	5-11	CL	CL	A-6	0	0	95-100	90-100	90-100	70-80	30-40	15-20
	11-31	C, SIC	CH, CL, MH, ML	A-7	0	0	90-100	85-100	80-95	65-95	45-70	20-35
	31-70	CL	CL	A-6	0	0	90-100	85-100	80-95	65-80	30-40	15-20
50002:												
Keswick-----	0-7	SIL	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	70-90	20-30	5-15
	7-20	CL, C	CL, CH	A-7	0	0	95-100	90-100	80-100	65-95	40-70	20-40
	20-60	CL, SICL	CL	A-7, A-6	0	0	95-100	90-100	80-100	65-95	30-50	15-25
Urban land.												
50003:												
Mexico-----	0-7	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-15
	7-10	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	90-100	25-40	5-15
	10-13	SICL, SIC	CH, CL	A-7	0	0	100	100	90-100	90-100	45-60	25-35
	13-27	SIC, C	CH	A-7	0	0	100	100	95-100	95-100	60-75	30-45
	27-60	SICL, CL, SIC	CH, CL	A-7	0	0	100	95-100	90-100	70-100	40-65	15-40
50004:												
Mexico-----	0-7	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-15
	7-22	C, SIC	CH	A-7	0	0	100	100	95-100	90-100	60-75	30-45
	22-41	SIC, SICL	CL, CH	A-7	0	0	100	100	95-100	95-100	45-60	25-35
	41-60	SIL, CL, SIC, SICL	CH, CL	A-6, A-7	0	0	100	95-100	90-100	70-100	35-65	15-40
50005:												
Mexico-----	0-7	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-15
	7-10	SIL	CL, CL-ML	A-6, A-4	0	0	100	100	90-100	90-100	25-40	5-15
	10-13	SICL, SIC	CH, CL	A-7	0	0	100	100	90-100	90-100	45-60	25-35
	13-27	SIC, C	CH	A-7	0	0	100	100	95-100	95-100	60-75	30-45
	27-60	SICL, CL, SIC	CL, CH	A-7	0	0	100	95-100	90-100	70-100	40-65	15-40
Urban land.												

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches						
							4	10	40	200		
	In				Pct	Pct					Pct	
50006: Vanmeter-----	0-5	CL	CL, MH	A-6, A-7	0	0-5	90-100	85-100	75-100	65-90	40-55	15-25
	5-12	SICL, CL	CH, CL	A-7	0	0-5	90-100	85-100	75-100	65-80	40-55	15-30
	12-23	SIC, C	CH, CL	A-7	0	0-5	80-100	75-100	70-100	65-95	40-65	24-40
	23-32	WB	---	---	---	---	---	---	---	---	---	---
	32-35	UWB	---	---	---	---	---	---	---	---	---	---
50007: Vanmeter-----	0-3	SIC	CL, CH	A-7	0	0-5	90-100	85-100	75-100	65-90	40-60	24-35
	3-20	SIC, C	CH, CL	A-7	0	0-5	90-100	75-100	70-100	65-95	40-65	24-40
	20-32	SICL, CL	CH, CL	A-7	0	0-5	90-100	85-100	75-100	65-85	40-55	15-30
	32-60	WB	---	---	---	---	---	---	---	---	---	---
50008: Keswick-----	0-7	SIL	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	70-90	20-30	5-15
	7-20	CL, C	CL, CH	A-7	0	0	95-100	90-100	80-100	65-95	40-70	20-40
	20-60	CL, SICL	CL	A-7, A-6	0	0	95-100	90-100	80-100	65-95	30-50	15-25
50009: Keswick-----	0-4	SIL	CL, CL-ML	A-4, A-6	0	0-5	95-100	85-100	80-100	70-90	20-30	5-15
	4-53	CL, C	CH, CL	A-7	0	0-5	90-100	85-100	75-100	65-95	40-70	20-40
	53-60	CL	CL	A-6	0	0-5	95-100	85-100	75-100	65-80	30-50	15-25
50010: Winnegan-----	0-5	L	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	75-95	55-80	20-30	5-15
	5-26	CL, C	CL	A-7	0	0	95-100	90-100	80-100	65-85	40-50	20-30
	26-45	CL, C	CL	A-7	0	0	95-100	90-100	80-100	65-85	40-50	20-30
	45-70	CL, L	CL	A-6	0	0	95-100	90-100	75-100	55-80	25-40	10-20
50011: Winnegan-----	0-2	L	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	75-95	55-75	20-35	5-15
	2-7	L	CL-ML, CL	A-6, A-4	0	0	95-100	90-100	75-95	55-75	20-30	5-15
	7-37	CL, C	CL	A-7	0	0	95-100	90-100	80-100	65-95	40-50	20-30
	37-60	CL, L	CL	A-6	0	0	95-100	90-100	75-100	55-80	25-40	10-20
50012: Putnam-----	0-9	SIL	CL, ML	A-4, A-6	0	0	100	100	90-100	85-100	30-40	5-20
	9-14	SIL	CL, ML	A-6, A-4	0	0	100	100	90-100	85-100	30-40	5-25
	14-30	SIC, C	CH	A-7	0	0	100	100	95-100	90-100	60-70	35-45
	30-60	SICL	CL, CH	A-7	0	0	100	100	95-100	90-100	45-65	25-40
	60-72	SICL, SIL	CL	A-7	0	0	100	100	95-100	90-100	40-50	20-35

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
60003: Menfro-----	0-4	SIL	CL	A-6	0	0	100	100	95-100	90-100	25-35	11-20
	4-9	SIL	CL	A-6	0	0	100	100	95-100	90-100	25-35	11-20
	9-35	SICL	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-45	15-25
	35-60	SICL, SIL	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
60008: Menfro-----	0-3	SIL	CL	A-6	0	0	100	100	95-100	90-100	25-35	11-20
	3-11	SIL	CL	A-6	0	0	100	100	95-100	90-100	25-40	11-20
	11-40	SICL, SIL	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-45	20-25
	40-80	SIL, SICL	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
60009: Clinkenbeard----	0-4	FLV-CL	GC	A-7	10-30	25-50	55-95	50-85	50-80	40-65	40-45	20-25
	4-10	FLV-SIC, FLV- SICL	CL, GC, CH	A-7	10-15	30-50	55-80	50-75	50-75	45-70	45-55	20-30
	10-24	FLV-C, FLV-SIC	CH, CL	A-7	10-40	30-60	65-95	60-85	55-85	55-80	45-65	25-40
	24-80	UWB	---	---	---	---	---	---	---	---	---	---
Gasconade-----	0-2	FLV-CL	CL	A-7, A-6	3-15	35-60	75-90	70-90	60-80	55-70	35-45	15-25
	2-13	CBX-SIC, FLV-C, FLV-SIC	CH	A-7	1-15	50-75	75-100	70-95	60-85	55-80	50-65	25-35
	13-80	UWB	---	---	---	---	---	---	---	---	---	---
Rock outcrop.												
60010: Arisburg-----	0-7	SIL	CL	A-6	0	0	100	100	90-100	80-100	25-40	10-20
	7-11	SIL	CL	A-6	0	0	100	100	95-100	80-100	25-40	10-20
	11-15	SICL, SIC	CH, CL	A-6, A-7	0	0	100	100	95-100	85-100	35-60	20-35
	15-60	SICL, SIC	CL	A-6, A-7	0	0	100	100	90-100	85-100	35-50	20-35
60011: Arisburg-----	0-7	SIL	CL	A-6	0	0	100	100	90-100	80-100	25-40	10-20
	7-16	SICL	CH, CL	A-6, A-7	0	0	100	100	95-100	85-100	35-55	15-25
	16-57	SICL, SIC	CH, CL	A-6, A-7	0	0	100	100	95-100	85-100	35-60	20-35
	57-70	SICL, SIL	CL	A-6, A-7	0	0	100	100	90-100	80-100	35-50	15-35
60012: Bardley-----	0-3	CB-SIL	CL, CL-ML	A-4, A-6	0-5	10-30	80-100	75-90	50-90	50-80	25-35	5-15
	3-9	GR-SIL, GRV-SIL	GC	A-6, A-2	0-5	0-15	50-85	40-75	35-70	30-65	25-35	5-15
	9-36	CB-C, C, GR-C	GM, MH, SM	A-7	0-5	0-35	55-95	50-95	50-90	40-85	50-75	20-45
	36-80	UWB	---	---	---	---	---	---	---	---	---	---
Clinkenbeard----	0-3	CBV-SIC	CH, CL	A-7	10-25	25-50	60-95	55-85	50-80	45-75	40-55	20-30
	3-8	FLV-SIC, FLV- SICL, CBV-SIC	CL, CH	A-7	0-15	30-55	65-95	60-90	55-85	50-80	45-55	20-30
	8-25	FLV-SIC FLV-C, CBV-SIC	CH	A-7	10-30	30-60	65-95	60-90	55-90	50-85	45-65	25-40
	25-80	UWB	---	---	---	---	---	---	---	---	---	---

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
60019: Hatton-----	0-3	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	80-100	25-40	5-15
	3-6	SI, SIL	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	80-100	25-40	5-15
	6-32	SICL, SIC	CH, CL	A-6, A-7	0	0	100	100	95-100	90-100	35-60	20-35
	32-48	SICL, SIL	CL	A-6, A-7	0	0	100	85-100	80-100	75-100	30-45	15-25
	48-60	SICL, SIL	CL	A-6	0	0	100	90-100	85-100	70-85	30-40	10-20
60020: Lenzburg-----	0-3	SICL	CL	A-6, A-7	0-1	0-10	80-100	75-100	65-95	55-90	35-50	15-25
	3-14	GR-SICL, CL, GR-SIL	CL	A-6, A-7	0-2	0-10	60-95	50-85	45-80	35-70	25-45	10-25
	14-60	CB-SICL, GR- SICL, CL	CH, CL	A-6, A-7	0-5	0-35	60-95	50-85	45-80	40-75	30-55	15-30
60021: Lenzburg-----	0-5	CN-SICL	CL	A-6, A-7	0-1	0-5	55-90	50-85	45-80	40-80	35-50	15-25
	5-34	GR-SIL, GR-SICL	CL, GC	A-6, A-7	0-2	0-15	55-80	50-75	45-70	40-65	25-45	10-25
	34-50	CB-SICL	CL	A-6, A-7	0-10	10-40	70-95	65-90	65-90	55-85	25-45	10-25
	50-60	SIL, SICL, CL	CL	A-6, A-7	0-1	0-5	90-100	85-100	80-95	75-90	25-45	10-25
60022: Leonard-----	0-8	SIL	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	85-100	25-40	5-20
	8-26	SIC, SICL, C	CH	A-7	0	0	100	95-100	90-100	85-100	55-70	30-40
	26-60	SICL, SIC	CH	A-7	0	0	100	90-100	85-100	80-100	45-60	25-35
60023: Marion-----	0-3	SIL	CL, ML	A-4, A-6	0	0	100	100	90-100	90-100	25-40	5-15
	3-11	SIL	CL, ML	A-4, A-6	0	0	100	100	90-100	90-100	30-40	5-15
	11-27	SIC	CH	A-7	0	0	100	100	95-100	90-100	50-70	30-45
	27-60	SICL, SIL	CL	A-6, A-7	0	0	100	100	95-100	85-100	35-50	20-30
60024: Menfro-----	0-7	SIL	CL	A-6, A-4	0	0	100	100	95-100	90-100	25-35	8-20
	7-11	SIL	CL	A-6	0	0	100	100	95-100	90-100	25-35	11-20
	11-33	SICL, SIL	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-45	20-25
	33-60	SICL, SIL	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-20
60025: Urban land.												
Harvester-----	0-6	SICL	CL	A-6, A-7	0	0	100	100	95-100	90-100	35-45	20-25
	6-30	SICL, SIL	CL	A-6, A-7-6	0	0	100	100	95-100	90-100	35-45	15-25
	30-60	SICL, CL	CL	A-6, A-7-6	0	0	100	95-100	90-100	80-95	35-45	15-25

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches						
							4	10	40	200		
	In				Pct	Pct					Pct	
60026: Weller-----	0-8	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	90-100	25-40	5-15
	8-16	SICL, SIC	CH, CL	A-7	0	0	100	100	95-100	90-100	45-65	30-40
	16-54	SICL, SIL	CH, CL	A-6, A-7	0	0	100	100	95-100	90-100	30-55	10-30
	54-60	SIL	CL	A-6	0	0	100	100	90-100	80-100	30-40	10-20
60027: Weller-----	0-8	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	90-100	25-40	5-15
	8-13	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-20
	13-25	SICL, SIC	CH, CL	A-7	0	0	100	100	95-100	90-100	45-65	30-40
	25-60	SICL, SIL	CH, CL	A-6, A-7	0	0	100	100	90-100	80-100	30-55	10-30
60028: Weller-----	0-7	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	90-100	25-40	5-15
	7-13	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-20
	13-47	SICL, SIC	CH, CL	A-7	0	0	100	100	95-100	95-100	45-65	30-40
	47-80	SICL, SIL	CH, CL	A-6, A-7	0	0	100	100	90-100	80-100	30-55	10-30
60029: Weller-----	0-7	SIL	CL-ML, CL	A-4, A-6	0	0	100	100	90-100	90-100	25-40	5-15
	7-13	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-20
	13-47	SICL, SIC	CH, CL	A-7	0	0	100	100	95-100	95-100	45-65	30-40
	47-80	SICL, SIL	CH, CL	A-6, A-7	0	0	100	100	90-100	80-100	30-55	10-30
Urban land.												
60030: Winfield-----	0-6	SIL	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	25-40	5-20
	6-14	SIL	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	90-100	25-40	5-20
	14-30	SICL	CL	A-6, A-7	0	0	100	100	95-100	90-100	35-45	15-25
	30-54	SICL	CL	A-7, A-6	0	0	100	100	95-100	90-100	35-45	15-25
	54-72	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
60031: Winfield-----	0-6	SIL	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	90-100	25-35	5-20
	6-10	SIL	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	90-100	25-35	5-20
	10-40	SICL	CL	A-6, A-7	0	0	100	100	95-100	90-100	35-45	15-25
	40-60	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
60032: Winfield-----	0-5	SIL	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	25-40	5-20
	5-11	SIL	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	25-40	5-20
	11-26	SIL	CL	A-6	0	0	100	100	95-100	90-100	25-35	10-20
	26-60	SICL	CL	A-7, A-6	0	0	100	100	95-100	90-100	35-45	20-25

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
60033: Wrengart-----	0-5	SIL	CL, CL-ML	A-4	0	0	100	100	90-100	80-100	18-30	5-10
	5-11	SICL, SIL	CL-ML, CL	A-4, A-6	0	0	95-100	90-100	85-100	80-100	25-40	5-15
	11-34	SIL, SICL	CL	A-4, A-6	0	0	95-100	90-100	85-100	80-100	25-40	8-20
	34-57	GR-SICL, SICL	CL	A-4, A-6	0	0-5	75-100	70-100	65-95	65-95	25-40	8-20
	57-72	GRX-SIL, GRV- SICL	GC	A-2, A-4, A-6	0-5	0-20	25-55	20-50	20-45	15-40	25-40	8-15
60034: Wrengart-----	0-7	SICL	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	80-100	18-40	4-15
	7-24	SICL, SIC	CL	A-7, A-6	0	0	100	95-100	85-100	80-100	25-50	10-25
	24-60	SIL, SICL	CL	A-4, A-6	0	0	85-100	75-100	70-95	60-95	25-40	8-15
	60-80	GR-SIC, SIC, GR-C	CH, CL, GC	A-7, A-2-7	0-5	0-15	55-90	50-90	45-85	40-80	44-75	20-45
60035: Wrengart-----	0-7	SICL	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	80-100	18-40	4-15
	7-24	SICL, SIC	CL	A-6, A-7	0	0	100	95-100	90-100	80-100	25-50	10-25
	24-60	SIL, SICL	CL	A-4, A-6	0	0	85-100	75-100	70-95	60-95	25-40	8-15
	60-80	GR-SIC, SIC, GR-C	CH, CL, GC	A-7, A-2-7	0-5	0-15	55-90	50-90	45-85	40-80	44-75	20-45
Urban land.												
60036: Menfro-----	0-3	SIL	CL	A-6	0	0	100	100	95-100	90-100	25-35	11-20
	3-45	SIL, SICL	CL	A-7, A-6	0	0	100	100	95-100	90-100	35-45	11-25
	45-80	SIL, SICL	CL-ML, CL	A-6	0	0	100	100	95-100	90-100	25-40	5-20
60037: Wrengart-----	0-2	SIL	CL, CL-ML	A-4	0	0	100	100	90-100	80-100	18-30	4-10
	2-14	SIL	CL, CL-ML	A-4	0	0	100	100	90-100	80-100	18-30	4-10
	14-45	SICL, SIC	CL	A-4, A-6	0	0	100	95-100	90-100	80-100	25-40	8-20
	45-54	SIL, SICL	CL	A-4, A-6	0	0	85-100	75-100	70-100	60-100	25-40	8-20
	54-80	GRV-SIL, GRV- SICL	CH, CL, GC	A-7, A-2	0-5	0-15	40-65	30-60	25-55	25-50	34-60	12-20
60038: Rocheport-----	0-1	SIL	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	20-35	3-12
	1-5	SIL	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	20-35	3-12
	5-30	SICL, SIL	CL	A-6	0	0	100	100	95-100	90-100	30-40	12-20
	30-48	C, SIC	CL, CH	A-7	0	0	90-100	85-100	80-95	80-95	45-60	20-45
	48-52	WB	---	---	0	0	---	---	---	---	---	---
	52-80	UWB	---	---	---	---	---	---	---	---	---	---
Bonnefemme-----	0-1	SIL	CL, CL-ML	A-6, A-4	0	0	100	100	90-100	80-100	20-35	3-12
	1-10	SIL	CL, CL-ML	A-6	0	0	100	100	90-100	80-100	20-35	3-15
	10-17	SICL, SIC	CL	A-7	0	0	100	100	95-100	85-100	45-60	25-40
	17-28	SIC, C	CH	A-7	0	0	80-100	75-100	75-100	70-95	55-75	35-50
	28-80	UWB	---	---	---	---	---	---	---	---	---	---

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
60039:												
Rochepoint-----	0-5	SIL	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	20-35	3-12
	5-10	SIL	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	20-35	3-12
	10-29	SIL, SICL	CL	A-6	0	0	100	100	95-100	90-100	30-40	12-20
	29-46	C, SIC, SICL	CL, CH	A-7	0	0	90-100	85-100	80-95	75-95	40-60	20-45
	46-80	UWB	---	---	---	---	---	---	---	---	---	---
Bonnefemme-----	0-2	SIL	CL, CL-ML	A-6, A-4	0	0	100	100	90-100	80-100	20-35	3-12
	2-5	SIL	CL, CL-ML	A-6, A-4	0	0	100	100	90-100	80-100	20-35	3-12
	5-29	SICL, SIC	CL, CH	A-7	0	0	100	100	95-100	85-100	45-60	25-40
	29-39	C, SIC	CH	A-7	0	0	80-100	75-100	75-100	70-95	55-75	30-50
	39-80	UWB	---	---	---	---	---	---	---	---	---	---
64002:												
Freeburg-----	0-8	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	90-100	15-35	5-15
	8-18	SIL	CL, CL-ML	A-6, A-4	0	0	100	100	90-100	85-100	15-35	5-15
	18-37	SICL	CL	A-7, A-6	0	0	100	100	95-100	85-100	30-45	15-25
	37-65	SIL, SICL	CL	A-6, A-7	0	0	100	100	90-100	85-100	30-45	15-25
64004:												
Auxvasse-----	0-8	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	85-100	25-35	5-15
	8-15	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	85-100	25-35	5-15
	15-26	SIC, C	CH	A-7	0	0	100	100	95-100	90-100	55-70	30-45
	26-52	SICL	CL, CH	A-6, A-7	0	0	100	100	95-100	90-100	35-55	20-35
	52-72	SICL, SIC	CL, CH	A-6, A-7	0	0	100	100	95-100	90-100	35-60	20-35
64005:												
Moniteau-----	0-8	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	85-100	25-35	5-15
	8-17	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	85-100	25-35	5-15
	17-32	SICL	CL	A-6, A-7	0	0	100	100	95-100	80-100	30-45	15-25
	32-65	SIL, SICL	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	80-100	25-40	5-15
64006:												
Tanglenook-----	0-14	SIL	CL	A-6, A-4	0	0	100	100	90-100	80-100	25-35	7-20
	14-24	SIC	CH, CL	A-7	0	0	100	100	95-100	90-100	45-55	25-35
	24-65	SICL	CL	A-6, A-7	0	0	100	100	95-100	85-100	30-45	15-25
66007:												
Leta-----	0-22	SIC	CH, CL	A-7	0	0	100	100	95-100	90-100	45-65	30-45
	22-30	SICL, SIC	CL, CH	A-6, A-7	0	0	100	100	95-100	90-100	35-60	20-35
	30-44	SR--VFSL & SIL	CL, CL-ML	A-6, A-4	0	0	100	100	70-100	55-100	20-35	5-15
	44-72	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	80-100	70-95	20-35	5-15
66014:												
Haymond-----	0-7	SIL	CL, CL-ML, ML	A-4	0	0	100	100	90-100	85-100	20-30	3-10
	7-22	SIL	ML, CL, CL-ML	A-4	0	0	100	100	90-100	85-100	20-30	3-10
	22-80	SIL, L	CL, ML, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	60-100	15-35	2-15

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches						
							4	10	40	200		
	In				Pct	Pct					Pct	
66015: Blake-----	0-8	SIL	CL	A-6	0	0	100	100	90-100	85-100	30-40	10-20
	8-40	SICL, SIL	CL	A-6, A-7	0	0	100	100	90-100	85-100	30-50	10-30
	40-65	SIL	CL, ML, CL-ML	A-4, A-6	0	0	100	100	90-100	80-100	15-30	3-15
66016: Blake-----	0-3	SICL	CL	A-6, A-7	0	0	100	100	90-100	85-100	30-50	15-30
	3-23	SICL, SIL	CL	A-6, A-7	0	0	100	100	90-100	85-100	30-50	10-30
	23-60	SIL, SICL	CL, ML	A-4, A-6	0	0	100	100	90-100	80-100	30-40	5-15
66017: Cedargap-----	0-10	SIL	CL, CL-ML, ML	A-4	0	0-5	90-100	85-95	75-95	60-85	20-30	3-10
	10-60	CBX-CL, CBV- SIL, CBV-L, CBX-L	GC, GC-GM	A-2-4, A-2-6	0	30-55	45-75	40-70	35-65	30-60	30-40	8-18
Dameron-----	0-15	SIL	CL	A-6, A-4	0	0-5	95-100	90-100	85-100	80-95	25-40	8-20
	15-31	SIL, SICL	CL	A-6, A-4	0	0-1	95-100	90-100	85-100	80-95	25-40	8-20
	31-60	GR-L, GR-SCL, GRV-L	CL, GC, SC	A-2-6, A-6	0	0-10	35-75	25-70	25-70	20-65	30-40	10-20
66018: Darwin-----	0-7	SICL	CH, CL	A-7	0	0	100	100	95-100	85-100	45-65	25-40
	7-24	SICL, SIC	CH, CL	A-7	0	0	100	100	95-100	85-100	45-65	25-45
	24-59	SIC, C	CH, CL	A-7	0	0	100	100	95-100	90-100	45-85	25-55
	59-65	SR--SIL & SIC	CH, CL	A-6, A-7	0	0	100	100	90-100	75-100	35-70	20-45
66019: Haynie-----	0-5	L	CL, CL-ML, ML	A-4, A-6	0	0	100	100	85-100	60-80	20-30	2-15
	5-13	L	CL, CL-ML, ML	A-4, A-6	0	0	100	100	85-100	60-80	20-30	2-15
	13-66	SR--VFSL & SIL	CL, CL-ML, ML	A-4	0	0	100	100	70-100	40-100	0-25	NP-10
66020: Haynie-----	0-7	SIL	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	70-100	15-35	5-15
	7-60	SR--VFSL & SIL	ML, CL, CL-ML	A-4, A-6	0	0	100	100	60-100	40-100	15-25	NP-15
66021: Perche-----	0-4	L	ML, CL-ML	A-4	0	0	100	100	85-100	60-75	15-30	2-8
	4-60	SR--LS, FSL, L, & SIL	CL, SM, SC, CL-ML	A-4	0	0	100	100	60-100	10-85	15-35	2-10

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches						
							4	10	40	200		
	In				Pct	Pct					Pct	
66022: Sandover-----	0-6	S	SM, SP-SM	A-2-4	0	0	100	100	45-70	1-15	13-15	NP
	6-31	SR--FSL & S	SM	A-4, A-2-4	0	0	100	95-100	50-85	8-50	13-20	NP-5
	31-80	SR--VFSL & L	CL-ML, CL	A-4	0	0	100	98-100	85-100	50-75	20-30	3-10
66023: Sarpy-----	0-3	FS	SM	A-2-4, A-3	0	0	100	100	65-80	3-15	10-15	NP
	3-62	FS, LFS, S	SM, SP, SP-SM	A-2-4, A-3	0	0	100	100	60-90	2-35	10-15	NP
66024: Wilbur-----	0-8	SIL	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	70-100	20-35	3-15
	8-36	SIL	CL, CL-ML, ML	A-4	0	0	100	100	95-100	80-100	20-30	3-10
	36-66	SIL	ML, CL, CL-ML	A-4	0	0	100	100	95-100	80-100	20-30	3-10
66025: Jemerson-----	0-11	SIL	CL, CL-ML	A-4	0	0	100	100	90-100	70-95	20-30	5-11
	11-41	SIL, SICL	CL	A-6	0	0	100	100	90-100	70-95	25-40	11-20
	41-67	SIL, L	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	65-90	25-35	7-15
99000: Pits.												
99001: Water.												
99003: Miscellaneous water.												

Table 19.--Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
50000: Adco-----	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
	0-9	1-5	70-85	15-27	1.20-1.40	4.00-14.00	0.20-0.24	0.0-2.9	1.0-4.0	.55	.55	3	6	48
	9-16	1-10	65-80	15-30	1.20-1.40	4.00-14.00	0.16-0.20	0.0-2.9	0.5-1.0	.64	.64			
	16-28	1-5	35-50	50-65	1.20-1.40	0.01-0.42	0.09-0.11	6.0-8.9	0.5-1.0	.24	.24			
	28-49	1-5	45-60	32-50	1.25-1.45	0.42-1.40	0.12-0.18	6.0-8.9	0.1-1.0	.37	.37			
	49-60	5-25	50-70	20-35	1.30-1.50	0.42-1.40	0.14-0.18	3.0-5.9	0.1-0.5	.49	.49			
50001: Armstrong-----	0-5	30-40	40-50	15-27	1.35-1.50	4.00-14.00	0.20-0.22	3.0-5.9	1.0-3.0	.43	.43	3	6	48
	5-11	15-30	30-50	27-40	1.45-1.55	1.40-4.00	0.14-0.16	3.0-5.9	0.5-2.0	.32	.32			
	11-31	10-30	30-50	40-60	1.45-1.60	0.42-1.40	0.11-0.16	6.0-8.9	0.1-1.0	.28	.28			
	31-70	20-35	30-50	27-40	1.50-1.60	1.40-4.00	0.14-0.16	3.0-5.9	0.1-0.5	.32	.32			
50002: Keswick-----	0-7	20-35	40-60	22-27	1.45-1.50	4.00-14.00	0.17-0.22	3.0-5.9	1.0-3.0	.37	.37	3	6	48
	7-20	20-35	25-40	35-60	1.55-1.60	0.42-1.40	0.11-0.15	6.0-8.9	0.1-1.0	.24	.24			
	20-60	15-30	30-45	30-40	1.60-1.75	1.40-4.00	0.12-0.16	3.0-5.9	0.1-0.5	.32	.32			
Urban land.														
50003: Mexico-----	0-7	5-15	60-80	15-27	1.20-1.40	4.00-14.00	0.19-0.22	0.0-2.9	1.0-4.0	.49	.49	3	6	48
	7-10	5-15	60-80	15-27	1.20-1.40	4.00-14.00	0.17-0.20	0.0-2.9	1.0-4.0	.49	.49			
	10-13	3-10	50-65	35-45	1.25-1.45	1.40-4.00	0.17-0.20	6.0-8.9	0.1-2.0	.43	.43			
	13-27	1-5	30-55	45-60	1.25-1.45	0.01-0.42	0.08-0.12	6.0-8.9	0.1-2.0	.28	.28			
	27-60	1-25	40-70	27-50	1.25-1.45	0.42-1.40	0.14-0.18	6.0-8.9	0.1-0.5	.49	.49			
50004: Mexico-----	0-7	5-15	60-80	15-27	1.20-1.40	4.00-14.00	0.19-0.24	0.0-2.9	1.0-4.0	.49	.49	3	6	48
	7-22	1-15	30-55	45-60	1.25-1.45	0.01-0.42	0.08-0.12	6.0-8.9	0.1-2.0	.32	.32			
	22-41	1-15	40-70	30-50	1.25-1.45	0.42-1.40	0.12-0.17	6.0-8.9	0.1-0.5	.43	.43			
	41-60	1-25	40-75	20-50	1.25-1.45	1.40-4.00	0.12-0.18	3.0-5.9	0.1-0.5	.64	.64			
50005: Mexico-----	0-7	5-15	60-80	15-27	1.20-1.40	4.00-14.00	0.19-0.22	0.0-2.9	1.0-4.0	.49	.49	3	6	48
	7-10	5-15	60-80	15-27	1.20-1.40	4.00-14.00	0.17-0.20	0.0-2.9	1.0-4.0	.49	.49			
	10-13	3-10	50-65	35-45	1.25-1.45	1.40-4.00	0.17-0.20	6.0-8.9	0.1-2.0	.43	.43			
	13-27	1-5	30-55	45-60	1.25-1.45	0.01-0.42	0.08-0.12	6.0-8.9	0.1-2.0	.28	.28			
	27-60	1-25	40-70	27-50	1.25-1.45	0.42-1.40	0.14-0.18	6.0-8.9	0.1-0.5	.49	.49			
Urban land.														

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
50006: Vanmeter-----	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
	0-5	10-30	35-60	27-35	1.30-1.40	1.40-4.00	0.19-0.22	3.0-5.9	2.0-8.0	.28	.28	3	4L	86
	5-12	10-30	35-60	27-40	1.30-1.40	1.40-4.00	0.17-0.20	3.0-5.9	2.0-6.0	.28	.28			
	12-23	5-25	30-50	40-60	1.50-1.60	0.01-0.42	0.11-0.14	6.0-8.9	1.0-3.0	.20	.28			
	23-32	---	---	---	---	0.00-1.40	---	---	---	---	---			
	32-35	---	---	---	---	0.00-0.42	---	---	---	---	---			
50007: Vanmeter-----	0-3	10-30	35-55	40-50	1.30-1.40	0.01-0.42	0.13-0.18	6.0-8.9	2.0-10	.28	.28	3	4L	86
	3-20	10-30	30-50	40-60	1.50-1.60	0.01-0.42	0.11-0.16	6.0-8.9	1.0-2.0	.28	.28			
	20-32	5-25	35-60	27-40	1.30-1.40	1.40-4.00	0.17-0.20	3.0-5.9	0.0-1.0	.43	.43			
	32-60	---	---	---	---	0.00-1.40	---	---	---	---	---			
50008: Keswick-----	0-7	20-35	40-60	22-27	1.45-1.50	4.00-14.00	0.17-0.22	3.0-5.9	1.0-3.0	.37	.37	3	6	48
	7-20	20-35	25-40	35-60	1.55-1.60	0.42-1.40	0.11-0.15	6.0-8.9	0.1-1.0	.24	.24			
	20-60	15-30	30-45	30-40	1.60-1.75	1.40-4.00	0.12-0.16	3.0-5.9	0.1-0.5	.32	.32			
50009: Keswick-----	0-4	20-35	40-60	18-27	1.45-1.50	4.00-14.00	0.17-0.22	3.0-5.9	1.0-6.0	.37	.37	3	6	48
	4-53	20-35	25-40	35-60	1.55-1.60	0.42-1.40	0.11-0.15	6.0-8.9	0.1-1.0	.32	.32			
	53-60	15-35	30-45	30-40	1.60-1.75	1.40-4.00	0.12-0.16	3.0-5.9	0.1-0.5	.37	.37			
50010: Winnegan-----	0-5	20-40	30-55	15-27	1.20-1.40	4.00-14.00	0.16-0.18	0.0-2.9	1.0-4.0	.37	.37	5	6	48
	5-26	20-40	25-50	35-45	1.35-1.55	0.42-1.40	0.14-0.17	6.0-8.9	0.1-1.0	.28	.28			
	26-45	20-40	25-50	30-45	1.35-1.55	0.42-1.40	0.14-0.20	6.0-8.9	0.1-0.5	.32	.32			
	45-70	20-40	30-55	20-35	1.40-1.60	1.40-4.00	0.09-0.20	3.0-5.9	0.1-0.5	.49	.49			
50011: Winnegan-----	0-2	20-45	30-55	18-27	1.20-1.40	4.00-14.00	0.16-0.18	0.0-2.9	2.0-12	.32	.32	5	6	48
	2-7	20-45	25-50	10-25	1.35-1.55	4.00-14.00	0.16-0.18	0.0-3.0	1.0-3.0	.43	.43			
	7-37	20-45	25-50	35-45	1.35-1.55	0.42-1.40	0.11-0.17	6.0-8.9	0.5-2.0	.28	.28			
	37-60	20-45	30-55	20-35	1.40-1.60	1.40-4.00	0.17-0.20	3.0-5.9	0.1-0.5	.32	.32			
50012: Putnam-----	0-9	1-10	70-85	12-27	1.30-1.45	4.00-14.00	0.19-0.22	0.0-2.9	0.5-3.0	.55	.55	3	6	48
	9-14	1-10	70-80	12-27	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	0.5-2.0	.55	.55			
	14-30	1-10	35-55	45-60	1.20-1.40	0.01-0.42	0.09-0.11	6.0-8.9	0.5-2.0	.28	.28			
	30-60	1-10	45-70	27-40	1.25-1.45	0.42-1.40	0.17-0.20	3.0-5.9	0.1-1.0	.55	.55			
	60-72	5-10	50-70	25-40	1.25-1.45	0.42-1.40	0.17-0.20	3.0-5.9	0.1-0.5	.49	.49			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility	Wind erodi- bility
										Kw	Kf	T	group	index
60003: Menfro-----	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
	0-4	5-15	65-80	18-27	1.25-1.40	4.00-14.00	0.19-0.22	0.0-2.9	1.0-3.0	.49	.49	5	6	48
	4-9	5-15	55-75	18-27	1.30-1.45	4.00-14.00	0.17-0.20	0.0-2.9	1.0-2.0	.49	.49			
	9-35	1-15	55-75	27-35	1.35-1.50	4.00-14.00	0.17-0.20	3.0-5.9	0.1-0.5	.49	.49			
	35-60	1-15	55-75	15-30	1.30-1.45	4.00-14.00	0.17-0.20	0.0-2.9	0.1-0.5	.55	.55			
60008: Menfro-----	0-3	5-15	65-80	12-27	1.25-1.40	4.00-14.00	0.19-0.22	0.0-2.9	1.0-6.0	.37	.37	5	6	48
	3-11	5-15	55-80	10-27	1.30-1.45	4.00-14.00	0.18-0.20	0.0-2.9	0.5-2.0	.37	.37			
	11-40	1-15	55-75	25-35	1.35-1.50	4.00-14.00	0.18-0.20	3.0-5.9	0.1-0.5	.37	.37			
	40-80	1-15	55-75	15-30	1.30-1.45	4.00-14.00	0.18-0.20	0.0-2.9	0.1-0.5	.37	.37			
60009: Clinkenbeard----	0-4	20-30	35-50	27-40	1.35-1.50	4.00-42.00	0.08-0.14	3.0-5.9	8.0-16	.05	.28	2	8	0
	4-10	5-20	35-55	27-45	1.35-1.55	1.40-4.00	0.07-0.12	3.0-5.9	2.0-8.0	.05	.24			
	10-24	5-20	30-50	40-50	1.35-1.55	1.40-4.00	0.05-0.10	6.0-8.9	2.0-4.0	.05	.24			
	24-80	---	---	---	---	0.00-4.20	---	---	---	---	---			
Gasconade-----	0-2	20-30	30-50	30-40	1.35-1.50	4.00-14.00	0.05-0.17	3.0-5.9	8.0-16	.10	.24	1	8	0
	2-13	10-25	30-50	40-60	1.40-1.55	1.40-4.00	0.05-0.12	3.0-5.9	2.0-8.0	.05	.20			
	13-80	---	---	---	---	0.00-4.20	---	---	---	---	---			
Rock outcrop.														
60010: Arisburg-----	0-7	1-15	65-80	15-27	1.30-1.45	4.00-14.00	0.19-0.22	3.0-5.9	2.0-4.0	.49	.49	5	6	48
	7-11	1-15	65-80	12-27	1.30-1.45	1.40-4.00	0.19-0.22	3.0-5.9	1.0-3.0	.55	.55			
	11-15	1-15	50-70	27-40	1.35-1.45	1.40-4.00	0.11-0.20	6.0-8.9	0.5-2.0	.43	.43			
	15-60	1-15	50-70	27-45	1.40-1.50	1.40-4.00	0.11-0.20	3.0-5.9	0.2-1.0	.43	.43			
60011: Arisburg-----	0-7	1-15	65-80	15-27	1.30-1.45	4.00-14.00	0.19-0.22	3.0-5.9	1.0-4.0	.49	.49	5	6	48
	7-16	1-15	50-70	27-40	1.30-1.45	1.40-4.00	0.17-0.20	6.0-8.9	1.0-3.0	.32	.32			
	16-57	1-15	50-70	27-45	1.35-1.45	1.40-4.00	0.11-0.20	6.0-8.9	0.5-1.0	.37	.37			
	57-70	1-15	60-75	18-30	1.40-1.50	4.00-14.00	0.17-0.20	3.0-5.9	0.1-0.5	.55	.55			
60012: Bardley-----	0-3	5-20	60-80	15-27	1.40-1.55	4.00-14.00	0.12-0.17	0.0-2.9	2.0-6.0	.28	.43	2	8	0
	3-9	5-20	60-75	15-27	1.40-1.55	4.00-14.00	0.10-0.14	0.0-2.9	1.0-3.0	.24	.49			
	9-36	5-20	20-45	50-85	1.20-1.40	4.00-14.00	0.08-0.12	3.0-5.9	0.5-2.0	.05	.10			
	36-80	---	---	---	---	0.00-4.20	---	---	---	---	---			
Clinkenbeard----	0-3	5-20	35-55	35-50	1.35-1.50	1.40-4.00	0.06-0.10	3.0-5.9	4.0-12	.05	.20	2	8	0
	3-8	5-20	35-55	35-55	1.35-1.55	1.40-4.00	0.07-0.10	6.0-8.9	4.0-8.0	.10	.24			
	8-25	5-15	30-50	40-60	1.35-1.55	1.40-4.00	0.05-0.10	6.0-8.9	2.0-4.0	.05	.24			
	25-80	---	---	---	---	0.00-4.20	---	---	---	---	---			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
60019: Hatton-----	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
	0-3	1-15	70-80	12-27	1.35-1.45	4.00-14.00	0.19-0.22	0.0-2.9	2.0-8.0	.55	.55	3	6	48
	3-6	1-15	70-85	8-20	1.35-1.50	4.00-14.00	0.19-0.22	0.0-2.9	1.0-2.0	.64	.64			
	6-32	1-15	45-70	27-48	1.30-1.40	0.42-1.40	0.11-0.16	3.0-5.9	0.5-1.0	.43	.43			
	32-48	5-20	50-75	25-35	1.45-1.65	0.01-0.42	0.17-0.20	3.0-5.9	0.2-0.5	.49	.49			
	48-60	10-30	45-70	20-35	1.30-1.40	0.42-1.40	0.17-0.20	3.0-5.9	0.2-0.5	.55	.55			
60020: Lenzburg-----	0-3	10-35	35-70	27-40	1.30-1.60	1.40-4.00	0.17-0.22	3.0-5.9	2.0-6.0	.24	.24	5	4L	86
	3-14	15-35	40-65	20-35	1.40-1.70	4.00-14.00	0.11-0.17	3.0-5.9	1.0-4.0	.20	.37			
	14-60	15-35	40-65	27-40	1.40-1.70	1.40-4.00	0.08-0.18	6.0-8.9	0.5-4.0	.20	.32			
60021: Lenzburg-----	0-5	10-35	40-65	27-35	1.30-1.60	1.40-4.00	0.16-0.20	3.0-5.9	0.5-2.0	.24	.37	5	4L	86
	5-34	15-35	40-65	25-35	1.30-1.60	1.40-4.00	0.15-0.18	3.0-5.9	0.5-1.0	.20	.37			
	34-50	10-35	40-65	27-35	1.30-1.60	1.40-4.00	0.08-0.12	3.0-5.9	0.1-0.5	.10	.43			
	50-60	10-35	40-65	25-35	1.30-1.60	1.40-4.00	0.15-0.20	3.0-5.9	0.1-0.5	.37	.37			
60022: Leonard-----	0-8	1-10	55-75	20-27	1.20-1.40	4.00-14.00	0.19-0.22	3.0-5.9	2.0-4.0	.37	.37	3	6	48
	8-26	1-10	35-60	35-52	1.30-1.45	0.42-1.40	0.11-0.16	6.0-8.9	0.5-2.0	.32	.32			
	26-60	10-20	40-60	30-45	1.20-1.35	0.42-1.40	0.14-0.17	6.0-8.9	0.1-0.5	.37	.37			
60023: Marion-----	0-3	1-10	70-85	10-18	1.30-1.45	4.00-14.00	0.17-0.20	0.0-2.9	0.5-4.0	.55	.55	3	6	48
	3-11	1-10	70-80	10-20	1.30-1.45	4.00-14.00	0.17-0.20	0.0-2.9	0.5-1.0	.64	.64			
	11-27	1-5	40-60	48-60	1.30-1.65	0.01-0.42	0.11-0.16	6.0-8.9	0.5-1.0	.28	.28			
	27-60	1-5	50-70	25-40	1.30-1.55	0.42-1.40	0.17-0.20	3.0-5.9	0.1-0.5	.49	.49			
60024: Menfro-----	0-7	5-15	65-80	12-27	1.25-1.40	4.00-14.00	0.17-0.20	0.0-2.9	1.0-3.0	.55	.55	5	6	48
	7-11	5-15	55-80	15-27	1.30-1.45	4.00-14.00	0.17-0.20	0.0-2.9	0.5-2.0	.55	.55			
	11-33	1-15	55-75	25-35	1.35-1.50	4.00-14.00	0.17-0.20	3.0-5.9	0.1-0.8	.43	.43			
	33-60	1-15	55-75	15-30	1.30-1.45	4.00-14.00	0.17-0.20	0.0-2.9	0.0-0.5	.49	.49			
60025: Urban land.														
Harvester-----	0-6	1-10	55-75	27-40	1.40-1.60	1.40-4.00	0.17-0.20	3.0-5.9	0.5-1.0	.43	.43	5	6	48
	6-30	1-10	55-75	18-35	1.35-1.60	1.40-4.00	0.17-0.20	3.0-5.9	0.1-1.0	.49	.49			
	30-60	15-30	35-65	27-35	1.35-1.50	4.00-14.00	0.17-0.20	3.0-5.9	0.1-1.0	.43	.43			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
60026: Weller-----	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
	0-8	5-15	69-75	15-27	1.35-1.45	4.00-14.00	0.17-0.20	0.0-2.9	1.0-3.0	.55	.55	3	6	48
	8-16	5-15	45-60	35-48	1.35-1.50	0.42-1.40	0.11-0.16	6.0-8.9	0.1-1.0	.37	.37			
	16-54	5-15	55-70	20-35	1.40-1.55	1.40-4.00	0.17-0.20	6.0-8.9	0.1-0.5	.49	.49			
	54-60	10-25	55-70	16-27	1.35-1.45	4.00-14.00	0.17-0.20	0.0-2.9	0.1-0.5	.55	.55			
60027: Weller-----	0-8	5-10	65-80	12-18	1.35-1.45	4.00-14.00	0.17-0.20	0.0-2.9	1.0-3.0	.55	.55	3	6	48
	8-13	5-10	60-75	18-27	1.35-1.45	4.00-14.00	0.17-0.20	0.0-2.9	0.5-2.0	.55	.55			
	13-25	1-10	50-65	35-48	1.35-1.50	0.42-1.40	0.11-0.16	6.0-8.9	0.2-1.0	.37	.37			
	25-60	1-10	60-70	20-35	1.40-1.55	1.40-4.00	0.17-0.20	6.0-8.9	0.1-0.5	.49	.49			
60028: Weller-----	0-7	5-10	60-80	12-18	1.35-1.45	4.00-14.00	0.17-0.20	0.0-2.9	1.0-4.0	.55	.55	3	6	48
	7-13	5-10	60-80	16-27	1.35-1.45	4.00-14.00	0.17-0.20	0.0-2.9	1.0-2.0	.55	.55			
	13-47	1-10	50-70	27-48	1.35-1.50	0.42-1.40	0.11-0.16	6.0-8.9	0.0-0.5	.43	.43			
	47-80	5-20	50-70	20-35	1.40-1.55	1.40-4.00	0.17-0.20	6.0-8.9	0.0-0.5	.55	.55			
60029: Weller-----	0-7	5-10	60-80	12-18	1.35-1.45	4.00-14.00	0.17-0.20	0.0-2.9	1.0-4.0	.55	.55	3	6	48
	7-13	5-10	60-80	16-27	1.35-1.45	4.00-14.00	0.17-0.20	0.0-2.9	1.0-2.0	.55	.55			
	13-47	1-10	50-70	27-48	1.35-1.50	0.42-1.40	0.11-0.16	6.0-8.9	0.0-0.5	.43	.43			
	47-80	5-20	50-70	20-35	1.40-1.55	1.40-4.00	0.17-0.20	6.0-8.9	0.0-0.5	.55	.55			
Urban land.														
60030: Winfield-----	0-6	1-10	70-80	12-22	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	1.0-4.0	.43	.43	5	6	48
	6-14	1-10	70-80	14-22	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	0.5-1.0	.64	.64			
	14-30	1-10	55-70	27-35	1.30-1.50	4.00-14.00	0.17-0.20	3.0-5.9	0.1-0.5	.49	.49			
	30-54	1-10	60-75	27-35	1.30-1.50	4.00-14.00	0.17-0.20	3.0-5.9	0.1-0.5	.49	.49			
	54-72	1-10	60-75	20-27	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	0.1-0.5	.49	.49			
60031: Winfield-----	0-6	1-10	70-80	14-27	1.30-1.50	4.00-14.00	0.19-0.22	0.0-2.9	1.0-4.0	.55	.55	5	6	48
	6-10	1-10	70-80	15-27	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	0.5-1.0	.64	.64			
	10-40	1-10	55-70	27-35	1.30-1.50	4.00-14.00	0.17-0.20	3.0-5.9	0.1-0.5	.43	.43			
	40-60	1-10	60-75	20-27	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	0.1-0.5	.49	.49			
60032: Winfield-----	0-5	1-10	70-80	14-20	1.30-1.50	4.00-14.00	0.19-0.22	0.0-2.9	2.0-8.0	.43	.43	5	6	48
	5-11	1-10	70-80	15-20	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	0.5-1.0	.64	.64			
	11-26	1-10	60-75	20-27	1.30-1.50	4.00-14.00	0.17-0.20	3.0-5.9	0.1-0.5	.49	.49			
	26-60	1-15	55-70	27-35	1.30-1.50	4.00-14.00	0.17-0.20	3.0-5.9	0.1-0.5	.43	.43			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
60033: Wrengart-----	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
	0-5	1-15	65-80	12-27	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	1.0-4.0	.43	.43	4	5	56
	5-11	1-15	65-80	12-30	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	0.5-2.0	.55	.55			
	11-34	1-10	55-70	25-35	1.30-1.50	4.00-14.00	0.17-0.20	3.0-5.9	0.1-0.5	.43	.43			
	34-57	5-25	50-70	27-35	1.50-1.70	1.40-4.00	0.10-0.20	3.0-5.9	0.1-0.5	.43	.43			
	57-72	10-35	40-65	15-30	1.30-1.50	4.00-14.00	0.05-0.15	0.0-2.9	0.1-0.5	.10	.43			
60034: Wrengart-----														
	0-7	1-15	65-80	27-30	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	1.0-3.0	.43	.43	4	5	56
	7-24	1-15	55-70	27-45	1.30-1.50	4.00-14.00	0.17-0.20	3.0-5.9	0.4-1.0	.37	.37			
	24-60	5-35	40-70	18-32	1.50-1.70	1.40-4.00	0.16-0.20	0.0-2.9	0.1-0.5	.55	.55			
	60-80	5-15	15-45	40-80	1.25-1.45	1.40-4.00	0.08-0.14	3.0-5.9	0.1-0.5	.10	.15			
60035: Wrengart-----														
	0-7	1-15	65-80	27-30	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	1.0-3.0	.43	.43	4	5	56
	7-24	1-15	55-70	27-45	1.30-1.50	4.00-14.00	0.17-0.20	3.0-5.9	0.4-1.0	.37	.37			
	24-60	5-35	40-70	18-32	1.50-1.70	1.40-4.00	0.16-0.20	0.0-2.9	0.1-0.5	.55	.55			
	60-80	5-15	15-45	40-80	1.25-1.45	1.40-4.00	0.08-0.14	3.0-5.9	0.1-0.5	.10	.15			
Urban land.														
60036: Menfro-----														
	0-3	5-15	65-80	18-27	1.25-1.40	4.00-14.00	0.17-0.20	0.0-2.9	0.5-4.0	.37	.37	5	6	48
	3-45	1-15	55-75	25-35	1.30-1.45	4.00-14.00	0.17-0.20	3.0-5.9	0.1-1.0	.43	.43			
	45-80	1-15	55-75	18-30	1.35-1.50	4.00-14.00	0.17-0.20	0.0-2.9	0.0-0.5	.55	.55			
60037: Wrengart-----														
	0-2	5-15	65-85	8-18	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	4.0-8.0	.49	.49	4	5	56
	2-14	5-15	65-85	8-18	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	0.5-1.0	.64	.64			
	14-45	1-10	55-70	27-40	1.30-1.50	4.00-14.00	0.17-0.20	3.0-5.9	0.1-0.5	.49	.49			
	45-54	1-15	50-70	18-32	1.50-1.70	1.40-4.00	0.10-0.20	0.0-2.9	0.1-0.5	.49	.49			
	54-80	5-20	50-70	25-40	1.25-1.45	4.00-14.00	0.08-0.18	3.0-5.9	0.1-0.5	.20	.49			
60038: Rocheport-----														
	0-1	1-15	60-85	10-18	1.10-1.40	4.00-14.00	0.19-0.22	0.0-2.9	8.0-16	.37	.37	3	5	56
	1-5	1-15	60-85	10-20	1.20-1.45	4.00-14.00	0.19-0.22	0.0-2.9	1.0-2.0	.43	.43			
	5-30	5-15	50-70	25-35	1.30-1.50	4.00-14.00	0.18-0.20	3.0-5.9	0.0-1.0	.28	.28			
	30-48	5-15	30-50	40-60	1.30-1.50	1.40-4.00	0.10-0.14	6.0-8.9	0.0-0.5	.28	.28			
	48-52	---	---	---	---	0.00-1.40	---	---	---	---	---			
	52-80	---	---	---	---	0.00-4.20	---	---	---	---	---			
Bonnefemme-----														
	0-1	5-15	70-80	10-20	1.10-1.35	4.00-14.00	0.19-0.22	0.0-2.9	4.0-12	.55	.55	2	5	56
	1-10	5-15	70-80	10-20	1.20-1.40	4.00-14.00	0.17-0.20	0.0-2.9	0.5-1.0	.64	.64			
	10-17	5-15	50-70	32-45	1.30-1.50	1.40-4.00	0.17-0.20	3.0-5.9	0.5-1.0	.43	.43			
	17-28	5-15	30-55	40-65	1.30-1.45	1.40-4.00	0.11-0.16	6.0-8.9	0.0-0.5	.24	.28			
	28-80	---	---	---	---	0.00-4.20	---	---	---	---	---			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
60039:														
Rocheport-----	0-5	1-15	60-85	10-18	1.10-1.40	4.00-14.00	0.19-0.22	0.0-2.9	7.0-16	.43	.43	3	5	56
	5-10	1-15	60-85	10-20	1.20-1.45	4.00-14.00	0.17-0.20	0.0-2.9	0.5-2.0	.64	.64			
	10-29	5-15	50-70	25-35	1.30-1.50	4.00-14.00	0.17-0.20	3.0-5.9	0.1-1.0	.43	.43			
	29-46	5-15	30-60	30-60	1.30-1.50	1.40-4.00	0.14-0.18	3.0-5.9	0.1-0.5	.37	.43			
	46-80	---	---	---	---	0.00-4.20	---	---	---	---	---			
Bonnefemme-----	0-2	5-15	70-80	10-20	1.10-1.35	4.00-14.00	0.19-0.22	0.0-2.9	4.0-14	.32	.32	2	5	56
	2-5	5-15	70-80	10-20	1.20-1.40	4.00-14.00	0.17-0.20	0.0-2.9	0.5-1.5	.55	.55			
	5-29	5-15	50-70	32-45	1.30-1.50	1.40-4.00	0.17-0.20	3.0-5.9	0.5-1.0	.43	.43			
	29-39	5-15	30-55	40-65	1.30-1.45	1.40-4.00	0.12-0.16	6.0-8.9	0.1-0.5	.28	.32			
	39-80	---	---	---	---	0.00-4.20	---	---	---	---	---			
64002:														
Freeburg-----	0-8	5-15	70-80	12-25	1.20-1.45	4.00-14.00	0.17-0.20	0.0-2.9	0.5-2.0	.55	.55	5	6	48
	8-18	5-15	70-80	10-20	1.40-1.50	4.00-14.00	0.17-0.20	0.0-2.9	0.2-1.0	.64	.64			
	18-37	5-15	50-70	27-35	1.40-1.50	1.40-4.00	0.17-0.20	3.0-5.9	0.1-0.5	.43	.43			
	37-65	10-20	45-65	25-32	1.35-1.50	1.40-4.00	0.17-0.20	3.0-5.9	0.1-0.5	.49	.49			
64004:														
Auxvasse-----	0-8	1-10	70-85	8-16	1.30-1.45	4.00-14.00	0.17-0.24	0.0-2.9	1.0-2.0	.64	.64	3	5	56
	8-15	1-10	70-80	10-20	1.30-1.45	4.00-14.00	0.17-0.23	0.0-2.9	0.5-2.0	.64	.64			
	15-26	1-10	35-55	40-60	1.25-1.40	0.01-0.42	0.08-0.14	6.0-8.9	0.5-2.0	.28	.28			
	26-52	1-10	40-65	33-40	1.35-1.50	1.40-4.00	0.17-0.20	3.0-5.9	0.1-0.5	.49	.49			
	52-72	1-10	45-60	35-50	1.35-1.50	1.40-4.00	0.11-0.17	3.0-5.9	0.1-0.5	.37	.37			
64005:														
Moniteau-----	0-8	1-10	70-85	15-25	1.20-1.40	4.00-14.00	0.17-0.20	0.0-2.9	1.0-2.0	.55	.55	5	6	48
	8-17	1-10	70-85	10-20	1.20-1.40	4.00-14.00	0.17-0.20	0.0-2.9	0.1-0.5	.64	.64			
	17-32	1-15	55-70	27-35	1.30-1.50	1.40-4.00	0.17-0.20	3.0-5.9	0.1-0.5	.43	.43			
	32-65	1-15	60-75	18-30	1.25-1.45	1.40-4.00	0.17-0.20	0.0-2.9	0.1-0.5	.55	.55			
64006:														
Tanglenook-----	0-14	5-20	50-70	18-27	1.25-1.35	4.00-14.00	0.19-0.24	0.0-2.9	2.0-8.0	.37	.37	5	4	86
	14-24	5-15	45-65	40-50	1.30-1.40	0.42-1.40	0.11-0.16	6.0-8.9	1.0-2.0	.32	.32			
	24-65	1-10	50-70	27-40	1.40-1.50	1.40-4.00	0.17-0.20	3.0-5.9	0.1-1.0	.43	.43			
66007:														
Leta-----	0-22	1-5	45-60	40-48	1.30-1.45	0.42-1.40	0.13-0.18	6.0-8.9	2.0-4.0	.32	.32	5	4	86
	22-30	0-5	45-65	35-45	1.30-1.50	0.42-1.40	0.11-0.16	6.0-8.9	1.0-2.0	.32	.32			
	30-44	5-55	25-80	10-27	1.30-1.50	4.00-14.00	0.12-0.20	0.0-2.9	0.5-1.0	.64	.64			
	44-72	5-40	25-70	5-20	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	0.0-1.0	.64	.64			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
66014: Haymond-----	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
	0-7	5-17	60-80	10-20	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	1.0-3.0	.55	.55	5	5	56
	7-22	5-15	60-80	10-20	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	0.5-2.0	.64	.64			
	22-80	5-20	45-80	5-22	1.30-1.50	4.00-14.00	0.16-0.20	0.0-2.9	0.2-2.0	.64	.64			
66015: Blake-----	0-8	0-25	40-70	22-27	1.25-1.30	4.00-14.00	0.19-0.22	3.0-5.9	1.0-3.0	.43	.43	5	4L	86
	8-40	5-15	50-80	22-35	1.25-1.30	4.00-14.00	0.17-0.20	3.0-5.9	0.1-2.0	.43	.43			
	40-65	5-20	70-84	7-20	1.30-1.35	4.00-14.00	0.17-0.20	0.0-2.9	0.1-0.5	.64	.64			
66016: Blake-----	0-3	0-20	50-70	27-35	1.25-1.30	4.00-14.00	0.19-0.22	3.0-5.9	1.0-4.0	.32	.32	5	4L	86
	3-23	0-15	65-80	22-35	1.25-1.30	4.00-14.00	0.17-0.20	3.0-5.9	0.5-2.0	.49	.49			
	23-60	5-20	60-80	10-35	1.30-1.35	4.00-14.00	0.17-0.20	3.0-5.9	0.1-2.0	.49	.49			
66017: Cedargap-----	0-10	15-30	50-70	15-25	1.20-1.40	4.00-14.00	0.19-0.24	0.0-2.9	1.0-6.0	.32	.37	5	6	48
	10-60	15-45	20-60	25-35	1.30-1.50	4.00-14.00	0.05-0.07	0.0-2.9	0.5-2.0	.05	.28			
Dameron-----	0-15	15-30	55-70	18-27	1.25-1.40	4.00-14.00	0.19-0.22	0.0-2.9	2.0-4.0	.32	.32	4	6	48
	15-31	10-30	50-65	18-32	1.25-1.40	4.00-14.00	0.19-0.22	3.0-5.9	1.0-3.0	.43	.43			
	31-60	25-50	25-45	18-27	1.20-1.50	4.00-14.00	0.04-0.10	0.0-2.9	0.0-2.0	.05	.24			
66018: Darwin-----	0-7	5-20	45-60	27-40	1.20-1.40	0.42-1.40	0.16-0.20	6.0-8.9	2.0-5.0	.37	.37	5	4	86
	7-24	5-20	45-60	35-45	1.30-1.50	0.01-0.42	0.14-0.18	6.0-8.9	1.0-3.0	.37	.37			
	24-59	1-10	30-50	40-60	1.40-1.60	0.01-0.42	0.10-0.20	9.0-25.0	0.5-1.0	.32	.32			
	59-65	1-20	50-70	25-50	1.40-1.60	0.42-1.40	0.14-0.20	6.0-8.9	0.5-1.0	.49	.49			
66019: Haynie-----	0-5	30-50	30-50	10-18	1.20-1.35	4.00-14.00	0.18-0.20	0.0-2.9	1.0-3.0	.55	.55	5	5	56
	5-13	30-50	25-50	10-18	1.20-1.35	4.00-14.00	0.18-0.20	0.0-2.9	1.0-2.0	.55	.55			
	13-66	30-70	20-60	5-15	1.20-1.35	4.00-14.00	0.17-0.19	0.0-2.9	0.2-1.0	.64	.64			
66020: Haynie-----	0-7	5-30	60-80	3-25	1.20-1.35	4.00-14.00	0.18-0.22	0.0-2.9	0.5-3.0	.43	.43	5	3	86
	7-60	30-95	20-75	3-15	1.20-1.35	4.00-14.00	0.12-0.20	0.0-2.9	0.1-1.0	.64	.64			
66021: Percche-----	0-4	30-50	30-50	5-15	1.20-1.35	4.00-14.00	0.16-0.18	0.0-2.9	2.0-4.0	.37	.37	5	5	56
	4-60	25-70	25-60	5-18	1.20-1.35	4.00-14.00	0.14-0.20	0.0-2.9	0.5-2.0	.43	.43			
66022: Sandover-----	0-6	70-98	1-20	1-5	1.40-1.60	42.00-141.00	0.06-0.09	0.0-2.9	0.1-0.5	.02	.02	5	1	220
	6-31	60-95	3-25	1-8	1.35-1.55	42.00-141.00	0.06-0.15	3.0-5.9	0.1-0.5	.24	.24			
	31-80	40-75	15-50	8-18	1.20-1.50	4.00-14.00	0.12-0.18	3.0-5.9	0.1-0.5	.55	.55			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
66023: Sarpy-----	0-3	70-99	1-15	0-5	1.20-1.50	42.00-141.00	0.05-0.09	0.0-2.9	0.1-0.5	.02	.02	5	1	220
	3-62	70-99	1-15	1-5	1.20-1.50	42.00-141.00	0.05-0.09	0.0-2.9	0.1-0.5	.02	.02			
66024: Wilbur-----	0-8	1-10	70-80	10-27	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	2.0-6.0	.43	.43	5	5	56
	8-36	1-10	60-80	10-18	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	0.5-1.0	.64	.64			
	36-66	5-20	60-75	10-18	1.30-1.50	4.00-14.00	0.17-0.20	0.0-2.9	0.1-0.5	.64	.64			
66025: Jemerson-----	0-11	5-20	70-80	10-20	1.25-1.40	4.00-14.00	0.17-0.20	0.0-2.9	0.5-2.0	.64	.64	5	6	48
	11-41	5-20	50-70	18-35	1.30-1.50	4.00-14.00	0.17-0.20	3.0-5.9	0.1-1.0	.49	.49			
	41-67	15-35	40-65	15-27	1.30-1.45	4.00-14.00	0.16-0.20	0.0-2.9	0.1-0.5	.55	.55			
99000: Pits.														
99001: Water.														
99003: Miscellaneous water.														

Table 20.--Chemical Properties of the Soils

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
50000: Adco-----	0-9	10-20	5.0-15	4.5-7.3	---
	9-16	5.0-15	5.0-15	4.5-6.5	---
	16-28	25-40	20-30	4.5-6.5	---
	28-49	15-35	20-30	5.1-7.3	---
	49-60	15-30	---	5.6-7.3	---
50001: Armstrong-----	0-5	10-18	---	5.6-7.3	---
	5-11	20-30	15-25	4.5-6.0	---
	11-31	25-45	20-35	4.5-6.0	---
	31-70	20-35	20-30	5.1-7.8	---
50002: Keswick-----	0-7	12-18	6.0-15	4.5-7.3	---
	7-20	18-36	18-35	4.5-6.0	---
	20-60	18-36	18-35	4.5-6.5	---
Urban land.					
50003: Mexico-----	0-7	10-18	---	5.6-7.3	---
	7-10	10-18	10-20	5.1-7.3	---
	10-13	18-26	10-20	4.5-7.3	---
	13-27	25-35	25-30	4.5-6.0	---
	27-60	14-26	20-30	4.5-6.0	---
50004: Mexico-----	0-7	10-20	---	5.6-7.3	---
	7-22	25-35	25-30	4.5-6.0	---
	22-41	20-30	20-30	4.5-6.0	---
	41-60	12-20	10-20	5.1-7.3	---
50005: Mexico-----	0-7	10-18	---	5.6-7.3	---
	7-10	10-18	10-20	5.1-7.3	---
	10-13	18-26	10-20	5.1-7.3	---
	13-27	25-35	25-30	4.5-6.0	---
	27-60	14-26	20-30	4.5-6.0	---
Urban land.					
50006: Vanmeter-----	0-5	20-35	---	6.1-8.4	0-30
	5-12	25-30	---	6.1-8.4	0-30
	12-23	41-50	---	6.1-8.4	0-30
	23-32	---	---	---	---
	32-35	---	---	---	---
50007: Vanmeter-----	0-3	20-35	---	6.1-8.4	0-30
	3-20	20-35	---	6.1-8.4	0-30
	20-32	15-30	---	6.1-8.4	0-30
	32-60	---	---	---	---

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
50008: Keswick-----	0-7	12-18	6.0-15	4.5-7.3	---
	7-20	18-36	18-35	4.5-6.0	---
	20-60	18-36	18-35	4.5-6.5	---
50009: Keswick-----	0-4	15-25	18-30	4.5-7.3	---
	4-53	20-30	18-30	4.5-6.0	---
	53-60	18-30	18-30	4.5-7.3	---
50010: Winnegan-----	0-5	10-18	10-20	4.5-7.3	---
	5-26	18-26	15-25	4.5-6.5	---
	26-45	18-26	---	6.6-7.3	1-5
	45-70	10-18	---	7.4-8.4	1-5
50011: Winnegan-----	0-2	25-40	25-40	4.5-7.3	---
	2-7	10-20	5.0-15	4.5-6.5	---
	7-37	20-30	20-30	4.5-6.5	1-5
	37-60	12-20	---	7.4-8.4	1-5
50012: Putnam-----	0-9	7.0-20	12-22	4.5-7.3	---
	9-14	7.0-18	8.0-16	4.5-6.5	---
	14-30	---	20-30	3.5-5.5	---
	30-60	---	15-25	3.5-5.5	---
	60-72	15-25	15-25	5.1-6.0	---
60003: Menfro-----	0-4	12-18	10-15	5.1-7.3	---
	4-9	12-20	10-15	5.1-7.3	---
	9-35	15-24	10-25	4.5-7.3	---
	35-60	15-24	10-25	4.5-7.3	---
60008: Menfro-----	0-3	10-22	10-20	5.1-7.3	---
	3-11	10-18	5.0-15	4.5-7.3	---
	11-40	15-20	10-20	4.5-7.3	---
	40-80	14-24	10-20	4.5-7.3	---
60009: Clinkenbeard-----	0-4	30-55	---	6.1-7.8	---
	4-10	25-40	---	6.1-7.8	---
	10-24	25-40	---	6.6-8.4	---
	24-80	---	---	---	---
Gasconade-----	0-2	30-60	---	6.1-7.8	0
	2-13	30-60	---	6.1-7.8	0
	13-80	---	---	---	---
Rock outcrop.					
60010: Arisburg-----	0-7	12-24	---	5.6-7.3	---
	7-11	12-24	---	5.6-7.3	---
	11-15	18-35	10-25	4.5-6.5	---
	15-60	20-35	10-25	4.5-6.5	---

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
60011: Arisburg-----	0-7	12-24	---	5.6-7.3	---
	7-16	18-35	15-25	4.5-7.3	---
	16-57	18-35	15-25	4.5-6.5	---
	57-70	12-22	---	5.6-7.3	---
60012: Bardley-----	0-3	14-20	10-20	4.5-6.5	0
	3-9	13-20	10-20	4.5-6.5	0
	9-36	30-50	45-60	4.5-7.3	0
	36-80	---	---	---	---
Clinkenbeard-----	0-3	35-50	---	6.1-7.8	---
	3-8	30-45	---	6.1-7.8	---
	8-25	25-40	---	6.6-8.4	---
	25-80	---	---	---	---
60019: Hatton-----	0-3	18-26	12-22	5.1-7.3	---
	3-6	6.0-15	5.0-12	5.1-7.3	---
	6-32	25-35	12-25	3.5-5.5	---
	32-48	15-25	10-20	3.5-5.5	---
	48-60	12-20	10-20	5.1-6.0	---
60020: Lenzburg-----	0-3	17-29	---	6.6-7.8	0-20
	3-14	12-23	---	6.6-7.8	0-25
	14-60	15-29	---	6.6-7.8	0-26
60021: Lenzburg-----	0-5	10-20	---	6.6-8.4	0-20
	5-34	10-20	---	6.6-8.4	0-25
	34-50	10-20	---	6.6-8.4	0-25
	50-60	10-20	---	6.6-8.4	0-25
60022: Leonard-----	0-8	15-25	---	6.1-7.3	0
	8-26	25-35	20-30	4.5-6.5	0
	26-60	20-30	15-30	4.5-6.5	0
60023: Marion-----	0-3	7.0-16	5.0-15	4.5-6.5	0
	3-11	7.0-16	5.0-15	4.5-6.0	0
	11-27	25-40	25-30	3.5-5.5	0
	27-60	20-30	15-20	3.5-6.0	0
60024: Menfro-----	0-7	10-16	10-15	5.1-7.3	---
	7-11	10-18	10-20	5.1-7.3	---
	11-33	18-25	15-30	4.5-7.3	---
	33-60	18-25	15-30	4.5-7.3	---
60025: Urban land.					
Harvester-----	0-6	18-28	15-25	5.1-7.3	---
	6-30	18-28	15-25	5.1-7.3	---
	30-60	14-22	10-20	5.1-7.3	---

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
60026: Weller-----	0-8	15-20	10-20	4.5-7.3	0
	8-16	22-32	15-30	4.5-6.0	0
	16-54	22-30	15-25	5.1-6.5	0
	54-60	12-20	10-20	4.5-6.5	0
60027: Weller-----	0-8	12-18	10-20	5.1-7.3	0
	8-13	14-20	10-20	5.1-7.3	0
	13-25	25-35	15-30	4.5-6.0	0
	25-60	16-26	15-30	5.1-6.5	0
60028: Weller-----	0-7	15-20	8.0-16	4.5-7.3	0
	7-13	15-20	8.0-16	4.5-7.3	0
	13-47	20-30	15-25	4.5-6.0	0
	47-80	15-25	10-20	5.1-6.5	0
60029: Weller-----	0-7	15-20	8.0-16	4.5-7.3	0
	7-13	15-20	8.0-16	4.5-7.3	0
	13-47	20-30	15-25	4.5-6.0	0
	47-80	15-25	10-20	5.1-6.5	0
Urban land.					
60030: Winfield-----	0-6	10-16	---	5.6-7.3	---
	6-14	8.0-14	---	5.6-7.3	---
	14-30	15-25	10-20	4.5-6.5	---
	30-54	18-26	10-20	4.5-6.0	---
	54-72	15-25	15-25	5.1-6.0	---
60031: Winfield-----	0-6	10-15	---	5.6-7.3	---
	6-10	8.0-14	---	5.6-6.5	---
	10-40	13-18	10-25	4.5-6.5	---
	40-60	10-14	15-25	4.5-6.5	---
60032: Winfield-----	0-5	18-30	---	5.6-7.3	---
	5-11	10-18	---	5.6-6.5	---
	11-26	12-20	10-20	4.5-6.5	---
	26-60	18-28	15-25	4.5-6.5	---
60033: Wrengart-----	0-5	9.0-18	---	5.6-7.3	---
	5-11	6.0-15	---	5.6-7.3	---
	11-34	11-22	10-20	5.1-6.5	---
	34-57	11-22	10-20	4.5-6.5	---
	57-72	10-16	5.0-15	5.1-7.8	---
60034: Wrengart-----	0-7	9.0-23	---	5.6-7.3	---
	7-24	15-26	15-25	4.5-6.5	---
	24-60	11-22	10-15	5.1-7.3	---
	60-80	30-50	30-50	5.1-7.8	---

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
60035: Wrengart-----	0-7	9.0-23	---	5.6-7.3	---
	7-24	15-26	15-25	4.5-6.5	---
	24-60	11-22	10-15	5.1-7.3	---
	60-80	30-50	30-50	5.1-7.8	---
Urban land.					
60036: Menfro-----	0-3	15-22	10-20	5.1-7.3	---
	3-45	15-25	15-25	4.5-7.3	---
	45-80	15-23	15-25	4.5-7.3	---
60037: Wrengart-----	0-2	9.0-23	5.0-15	5.1-6.5	---
	2-14	8.0-18	5.0-15	4.5-6.5	---
	14-45	15-26	10-20	4.5-6.5	---
	45-54	15-26	10-20	5.1-6.5	---
	54-80	30-50	---	5.6-7.8	---
60038: Rocheport-----	0-1	35-45	40-50	5.1-7.3	---
	1-5	10-20	5.0-15	4.5-6.0	---
	5-30	15-25	10-20	4.5-6.0	---
	30-48	25-30	25-45	5.1-7.3	---
	48-52	---	---	---	---
	52-80	---	---	---	---
Bonnefemme-----	0-1	18-40	10-20	5.1-7.3	---
	1-10	8.0-14	5.0-15	4.5-6.0	---
	10-17	18-28	10-20	4.5-6.0	---
	17-28	18-30	15-30	4.5-7.3	---
	28-80	---	---	---	---
60039: Rocheport-----	0-5	20-30	10-20	5.1-7.3	---
	5-10	10-20	5.0-15	4.5-6.0	---
	10-29	15-25	15-25	4.5-6.0	---
	29-46	20-30	15-25	5.1-7.3	---
	46-80	---	---	---	---
Bonnefemme-----	0-2	30-40	30-40	5.1-7.3	---
	2-5	8.0-14	5.0-15	4.5-6.0	---
	5-29	18-28	10-25	4.5-6.0	---
	29-39	18-28	30-40	4.5-7.3	---
	39-80	---	---	---	---
64002: Freeburg-----	0-8	8.0-15	5.0-15	4.5-7.3	0
	8-18	6.0-14	5.0-15	4.5-6.5	0
	18-37	13-22	15-25	4.5-6.5	0
	37-65	13-22	15-25	4.5-7.3	0
64004: Auxvasse-----	0-8	8.0-18	8.0-20	5.5-7.3	0
	8-15	8.0-18	8.0-15	4.5-7.3	0
	15-26	25-40	20-35	4.5-6.5	0
	26-52	18-28	15-25	4.5-7.8	0
	52-72	18-32	20-30	4.5-7.8	0

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
64005: Moniteau-----	0-8	10-16	5.0-10	5.1-7.3	---
	8-17	6.0-12	4.0-8.0	4.5-6.5	---
	17-32	18-25	14-24	4.5-6.5	---
	32-65	12-20	10-15	4.5-6.5	---
64006: Tanglenook-----	0-14	18-25	---	5.6-7.3	0
	14-24	24-32	18-30	5.1-6.5	0
	24-65	22-30	20-28	5.1-6.5	0
66007: Leta-----	0-22	22-28	---	6.6-7.8	1-2
	22-30	20-28	---	6.6-7.8	1-2
	30-44	5.0-10	---	7.4-7.8	1-2
	44-72	2.0-5.0	---	7.4-8.4	1-2
66014: Haymond-----	0-7	8.0-18	---	6.1-7.8	0
	7-22	8.0-18	---	6.1-7.8	0
	22-80	4.0-20	---	6.1-7.8	0
66015: Blake-----	0-8	20-25	---	7.4-8.4	5-30
	8-40	20-30	---	7.4-8.4	5-30
	40-65	10-20	---	7.4-8.4	5-30
66016: Blake-----	0-3	20-25	---	7.4-8.4	5-30
	3-23	20-30	---	7.4-8.4	5-30
	23-60	10-20	---	7.4-8.4	5-30
66017: Cedargap-----	0-10	8.0-17	---	5.6-7.8	0
	10-60	12-20	---	5.6-7.8	0
Dameron-----	0-15	12-18	---	6.1-7.8	0
	15-31	12-20	---	6.1-7.8	0
	31-60	10-20	---	5.6-7.8	0
66018: Darwin-----	0-7	24-34	---	6.1-7.8	0
	7-24	27-38	---	6.1-7.8	0
	24-59	30-45	---	6.6-8.4	0-15
	59-65	18-34	---	6.6-8.4	0-15
66019: Haynie-----	0-5	10-20	---	6.1-7.8	0
	5-13	10-20	---	6.1-7.8	0
	13-66	5.0-15	---	6.6-8.4	0
66020: Haynie-----	0-7	10-25	---	6.6-8.4	0-25
	7-60	3.0-12	---	7.4-8.4	5-30
66021: Perche-----	0-4	5.0-20	---	6.1-7.8	---
	4-60	5.0-15	---	6.1-7.8	---

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
66022: Sandover-----	0-6	1.0-6.0	---	4.5-7.3	0
	6-31	2.0-8.0	---	4.5-7.8	0
	31-80	8.0-15	---	4.5-7.8	0
66023: Sarpy-----	0-3	1.0-6.0	---	6.6-8.4	1-2
	3-62	2.0-6.0	---	6.6-8.4	1-2
66024: Wilbur-----	0-8	18-25	---	5.6-7.3	0
	8-36	8.0-15	---	5.6-7.8	0
	36-66	8.0-15	---	5.6-7.8	0
66025: Jemerson-----	0-11	10-16	5.0-15	5.1-7.3	0
	11-41	12-18	10-20	5.1-7.3	0
	41-67	12-18	10-20	5.1-7.3	0
99000: Pits.					
99001: Water.					
99003: Miscellaneous water.					

Table 21.--Water Features

(See text for definitions of terms used in this table. Estimates of the frequency of flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro- logic group	Months	Water table	Flooding	
			Upper limit	Duration	Frequency
			Ft		
50000: Adco-----	D				
		January	1.0-2.5	---	None
		February	1.0-2.5	---	None
		March	1.0-2.5	---	None
		April	1.0-2.5	---	None
		May	1.0-2.5	---	None
		November	1.0-2.5	---	None
		December	1.0-2.5	---	None
50001: Armstrong-----	C				
		January	1.0-3.0	---	None
		February	1.0-3.0	---	None
		March	1.0-3.0	---	None
		April	1.0-3.0	---	None
		May	1.0-3.0	---	None
		November	1.0-3.0	---	None
		December	1.0-3.0	---	None
50002: Keswick-----	C				
		January	1.0-3.0	---	None
		February	1.0-3.0	---	None
		March	1.0-3.0	---	None
		April	1.0-3.0	---	None
		May	1.0-3.0	---	None
		June	1.0-3.0	---	None
		July	1.0-3.0	---	None
		November	1.0-3.0	---	None
		December	1.0-3.0	---	None
Urban land.					
50003: Mexico-----	D				
		January	1.0-2.5	---	None
		February	1.0-2.5	---	None
		March	1.0-2.5	---	None
		April	1.0-2.5	---	None
		May	1.0-2.5	---	None
		November	1.0-2.5	---	None
		December	1.0-2.5	---	None
50004: Mexico-----	D				
		January	1.0-2.5	---	None
		February	1.0-2.5	---	None
		March	1.0-2.5	---	None
		April	1.0-2.5	---	None
		May	1.0-2.5	---	None
		November	1.0-2.5	---	None
		December	1.0-2.5	---	None

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Months	Water table	Flooding	
			Upper limit	Duration	Frequency
			Ft		
50005: Mexico-----	D	January	1.0-2.5	---	None
		February	1.0-2.5	---	None
		March	1.0-2.5	---	None
		April	1.0-2.5	---	None
		May	1.0-2.5	---	None
		November	1.0-2.5	---	None
		December	1.0-2.5	---	None
Urban land.					
50006: Vanmeter-----	C	Jan-Dec	---	---	None
50007: Vanmeter-----	C	Jan-Dec	---	---	None
50008: Keswick-----	C	January	1.0-3.0	---	None
		February	1.0-3.0	---	None
		March	1.0-3.0	---	None
		April	1.0-3.0	---	None
		May	1.0-3.0	---	None
		June	1.0-3.0	---	None
		July	1.0-3.0	---	None
		November	1.0-3.0	---	None
		December	1.0-3.0	---	None
50009: Keswick-----	C	January	1.0-3.0	---	None
		February	1.0-3.0	---	None
		March	1.0-3.0	---	None
		April	1.0-3.0	---	None
		May	1.0-3.0	---	None
		June	1.0-3.0	---	None
		July	1.0-3.0	---	None
		November	1.0-3.0	---	None
		December	1.0-3.0	---	None
50010: Winnegan-----	C	January	2.0-3.5	---	None
		February	2.0-3.5	---	None
		March	2.0-3.5	---	None
		April	2.0-3.5	---	None
		November	2.0-3.5	---	None
		December	2.0-3.5	---	None
50011: Winnegan-----	C	January	2.0-3.5	---	None
		February	2.0-3.5	---	None
		March	2.0-3.5	---	None
		April	2.0-3.5	---	None
		November	2.0-3.5	---	None
		December	2.0-3.5	---	None

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Months	Water table	Flooding	
			Upper limit	Duration	Frequency
			Ft		
50012: Putnam-----	D	January	0.5-1.5	---	None
		February	0.5-1.5	---	None
		March	0.5-1.5	---	None
		April	0.5-1.5	---	None
		May	0.5-1.5	---	None
		November	0.5-1.5	---	None
		December	0.5-1.5	---	None
60003: Menfro-----	B	Jan-Dec	---	---	None
60008: Menfro-----	B	Jan-Dec	---	---	None
60009: Clinkenbeard-----	D	Jan-Dec	---	---	None
Gasconade-----	D	Jan-Dec	---	---	None
Rock outcrop.					
60010: Arisburg-----	B	January	1.5-2.5	---	None
		February	1.5-2.5	---	None
		March	1.5-2.5	---	None
		April	1.5-2.5	---	None
		November	1.5-2.5	---	None
		December	1.5-2.5	---	None
60011: Arisburg-----	B	January	1.5-2.5	---	None
		February	1.5-2.5	---	None
		March	1.5-2.5	---	None
		April	1.5-2.5	---	None
		November	1.5-2.5	---	None
		December	1.5-2.5	---	None
60012: Bardley-----	B	Jan-Dec	---	---	None
Clinkenbeard-----	D	Jan-Dec	---	---	None
60019: Hatton-----	C	January	2.0-3.0	---	None
		February	2.0-3.0	---	None
		March	2.0-3.0	---	None
		April	2.0-3.0	---	None
		May	2.0-3.0	---	None
		November	2.0-3.0	---	None
		December	2.0-3.0	---	None

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Months	Water table	Flooding	
			Upper limit	Duration	Frequency
			Ft		
60020: Lenzburg-----	B	Jan-Dec	---	---	None
60021: Lenzburg-----		Jan-Dec	---	---	None
60022: Leonard-----	D	January	0.5-1.5	---	None
		February	0.5-1.5	---	None
		March	0.5-1.5	---	None
		April	0.5-1.5	---	None
		November	0.5-1.5	---	None
		December	0.5-1.5	---	None
60023: Marion-----	D	January	1.0-2.0	---	None
		February	1.0-2.0	---	None
		March	1.0-2.0	---	None
		April	1.0-2.0	---	None
		May	1.0-2.0	---	None
		November	1.0-2.0	---	None
		December	1.0-2.0	---	None
60024: Menfro-----	B	Jan-Dec	---	---	None
60025: Urban land. Harvester-----		Jan-Dec	---	---	None
60026: Weller-----	C	January	2.0-4.0	---	None
		February	2.0-4.0	---	None
		March	2.0-4.0	---	None
		April	2.0-4.0	---	None
		November	2.0-4.0	---	None
		December	2.0-4.0	---	None
60027: Weller-----	C	January	2.0-4.0	---	None
		February	2.0-4.0	---	None
		March	2.0-4.0	---	None
		April	2.0-4.0	---	None
		November	2.0-4.0	---	None
		December	2.0-4.0	---	None
60028: Weller-----	C	January	2.0-4.0	---	None
		February	2.0-4.0	---	None
		March	2.0-4.0	---	None
		April	2.0-4.0	---	None
		November	2.0-4.0	---	None
		December	2.0-4.0	---	None

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Months	Water table	Flooding	
			Upper limit	Duration	Frequency
			Ft		
60029: Weller-----	C	January	2.0-4.0	---	None
		February	2.0-4.0	---	None
		March	2.0-4.0	---	None
		April	2.0-4.0	---	None
		November	2.0-4.0	---	None
		December	2.0-4.0	---	None
Urban land.					
60030: Winfield-----	B	January	2.0-3.5	---	None
		February	2.0-3.5	---	None
		March	2.0-3.5	---	None
		April	2.0-3.5	---	None
		November	2.0-3.5	---	None
		December	2.0-3.5	---	None
60031: Winfield-----	B	January	2.0-3.5	---	None
		February	2.0-3.5	---	None
		March	2.0-3.5	---	None
		April	2.0-3.5	---	None
		November	2.0-3.5	---	None
		December	2.0-3.5	---	None
60032: Winfield-----	B	January	2.0-3.5	---	None
		February	2.0-3.5	---	None
		March	2.0-3.5	---	None
		April	2.0-3.5	---	None
		November	2.0-3.5	---	None
		December	2.0-3.5	---	None
60033: Wrengart-----	C	January	2.0-3.5	---	None
		February	2.0-3.5	---	None
		March	2.0-3.5	---	None
		April	2.0-3.5	---	None
60034: Wrengart-----	C	January	2.0-3.5	---	None
		February	2.0-3.5	---	None
		March	2.0-3.5	---	None
		April	2.0-3.5	---	None
60035: Wrengart-----	C	January	2.0-3.5	---	None
		February	2.0-3.5	---	None
		March	2.0-3.5	---	None
		April	2.0-3.5	---	None
Urban land.					

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Months	Water table	Flooding	
			Upper limit	Duration	Frequency
			Ft		
60036: Menfro-----	B	Jan-Dec	---	---	None
60037: Wrengart-----	C	January	2.0-3.5	---	None
		February	2.0-3.5	---	None
		March	2.0-3.5	---	None
		April	2.0-3.5	---	None
60038: Rocheport-----	B	January	2.5-4.0	---	None
		February	2.5-4.0	---	None
		March	2.5-4.0	---	None
		April	2.5-4.0	---	None
		November	2.5-4.0	---	None
		December	2.5-4.0	---	None
Bonnefemme-----	C	Jan-Dec	---	---	None
60039: Rocheport-----	B	January	2.5-4.0	---	None
		February	2.5-4.0	---	None
		March	2.5-4.0	---	None
		April	2.5-4.0	---	None
		November	2.5-4.0	---	None
		December	2.5-4.0	---	None
Bonnefemme-----	C	Jan-Dec	---	---	None
64002: Freeburg-----	C	January	1.0-2.5	---	None
		February	1.0-2.5	---	None
		March	1.0-2.5	---	None
		April	1.0-2.5	---	None
		May	1.0-2.5	---	None
		November	1.0-2.5	---	None
		December	1.0-2.5	---	None
64004: Auxvasse-----	D	January	1.0-2.0	Very brief	Rare
		February	1.0-2.0	Very brief	Rare
		March	1.0-2.0	Very brief	Rare
		April	1.0-2.0	Very brief	Rare
		May	1.0-2.0	Very brief	Rare
		June	---	Very brief	Rare
		November	1.0-2.0	Very brief	Rare
		December	1.0-2.0	Very brief	Rare

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Months	Water table	Flooding	
			Upper limit	Duration	Frequency
			Ft		
64005: Moniteau-----	C/D	January	0.0-1.0	Brief	Occasional
		February	0.0-1.0	Brief	Occasional
		March	0.0-1.0	Brief	Occasional
		April	0.0-1.0	Brief	Occasional
		May	0.0-1.0	Brief	Occasional
		June	---	Very brief	Rare
		July	---	Very brief	Rare
		November	0.0-1.0	Very brief	Occasional
		December	0.0-1.0	Very brief	Occasional
64006: Tanglenook-----	D	January	0.0-1.5	Very brief	Rare
		February	0.0-1.5	Very brief	Rare
		March	0.0-1.5	Brief	Rare
		April	0.0-1.5	Brief	Rare
		May	---	Brief	Rare
		June	---	Very brief	Rare
		November	0.0-1.5	Very brief	Rare
		December	0.0-1.5	Very brief	Rare
66007: Leta-----	C	January	1.0-3.0	Brief	Rare
		February	1.0-3.0	Brief	Occasional
		March	1.0-3.0	Brief	Occasional
		April	1.0-3.0	Brief	Occasional
		May	1.0-3.0	Brief	Occasional
		June	1.0-3.0	Brief	Occasional
		July	---	Brief	Rare
		November	1.0-3.0	Brief	Rare
		December	1.0-3.0	Brief	Rare
66014: Haymond-----	B	January	---	Very brief	Frequent
		February	---	Very brief	Frequent
		March	---	Very brief	Frequent
		April	---	Very brief	Frequent
		May	---	Very brief	Frequent
		June	---	Very brief	Rare
		July	---	Very brief	Rare
		August	---	Very brief	Rare
		September	---	Very brief	Rare
		October	---	Very brief	Rare
		November	---	Very brief	Frequent
		December	---	Very brief	Frequent
66015: Blake-----	B	January	2.0-4.0	Brief	Occasional
		February	2.0-4.0	Brief	Occasional
		March	2.0-4.0	Brief	Occasional
		April	2.0-4.0	Brief	Occasional
		May	2.0-4.0	Brief	Occasional
		June	2.0-4.0	Brief	Occasional
		July	2.0-4.0	Brief	Rare
		November	2.0-4.0	Brief	Rare
		December	2.0-4.0	Brief	Rare

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Months	Water table	Flooding	
			Upper limit	Duration	Frequency
			Ft		
66016: Blake-----	B	January	2.0-4.0	Brief	Occasional
		February	2.0-4.0	Brief	Occasional
		March	2.0-4.0	Brief	Frequent
		April	2.0-4.0	Brief	Frequent
		May	2.0-4.0	Brief	Frequent
		June	2.0-4.0	Brief	Frequent
		July	2.0-4.0	Brief	Rare
		November	2.0-4.0	Brief	Rare
		December	2.0-4.0	Brief	Occasional
66017: Cedargap-----	B	January	---	Very brief	Frequent
		February	---	Very brief	Frequent
		March	---	Very brief	Frequent
		April	---	Very brief	Frequent
		May	---	Very brief	Frequent
		June	---	Very brief	Occasional
		July	---	Very brief	Rare
		November	---	Very brief	Frequent
		December	---	Very brief	Frequent
Dameron-----	B	January	---	Very brief	Frequent
		February	---	Very brief	Frequent
		March	---	Very brief	Frequent
		April	---	Very brief	Frequent
		May	---	Very brief	Frequent
		June	---	Very brief	Occasional
		July	---	---	Rare
		November	---	Very brief	Frequent
		December	---	Very brief	Frequent
66018: Darwin-----	D	January	0.0-1.5	Brief	Occasional
		February	0.0-1.5	Brief	Occasional
		March	0.0-1.5	Brief	Occasional
		April	0.0-1.5	Brief	Occasional
		May	0.0-1.5	Brief	Occasional
		June	0.0-1.5	Brief	Occasional
		July	---	Brief	Rare
		November	---	Brief	Rare
		December	---	Brief	Occasional
66019: Haynie-----	B	January	---	Brief	Rare
		February	---	Brief	Rare
		March	---	Brief	Occasional
		April	---	Brief	Occasional
		May	---	Brief	Occasional
		June	---	Brief	Occasional
		July	---	Brief	Rare
		December	---	Brief	Rare

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Months	Water table	Flooding	
			Upper limit	Duration	Frequency
			Ft		
66020: Haynie-----	B	January	---	Long	Frequent
		February	---	Long	Frequent
		March	---	Long	Frequent
		April	---	Long	Frequent
		May	---	Long	Frequent
		June	---	Long	Frequent
		July	---	Long	Rare
		August	---	Long	Rare
		September	---	Long	Rare
		October	---	Long	Rare
		November	---	Long	Rare
		December	---	Long	Frequent
66021: Perche-----	B	January	2.0-3.5	Very brief	Frequent
		February	2.0-3.5	Very brief	Frequent
		March	2.0-3.5	Very brief	Frequent
		April	2.0-3.5	Very brief	Frequent
		May	2.0-3.5	Very brief	Frequent
		June	---	Very brief	Rare
		July	---	Very brief	Rare
		August	---	Very brief	Rare
		September	---	Very brief	Rare
		October	---	Very brief	Rare
		November	---	Very brief	Frequent
		December	2.0-3.5	Very brief	Frequent
66022: Sandover-----	A	January	2.0-3.0	Brief	Occasional
		February	2.0-3.0	Brief	Occasional
		March	2.0-3.0	Brief	Occasional
		April	2.0-3.0	Brief	Occasional
		May	---	Brief	Occasional
		June	---	Brief	Rare
		November	---	Brief	Occasional
		December	2.0-3.0	Brief	Occasional
66023: Sarpy-----	A	January	---	Brief	Occasional
		February	---	Brief	Occasional
		March	---	Brief	Occasional
		April	---	Long	Occasional
		May	---	Long	Occasional
		June	---	Long	Occasional
		July	---	Brief	Occasional
		November	---	Brief	Occasional
		December	---	Brief	Occasional

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Months	Water table	Flooding	
			Upper limit	Duration	Frequency
			Ft		
66024: Wilbur-----	B	January	---	Very brief	Frequent
		February	---	Very brief	Frequent
		March	1.5-2.0	Very brief	Frequent
		April	1.5-2.0	Very brief	Frequent
		May	---	Very brief	Frequent
		June	---	Very brief	Frequent
		July	---	Very brief	Rare
		August	---	Very brief	Rare
		September	---	Very brief	Rare
		October	---	Very brief	Frequent
		November	---	Very brief	Frequent
		December	---	Very brief	Frequent
66025: Jemerson-----	B	January	3.5-5.0	Very brief	Rare
		February	3.5-5.0	Very brief	Rare
		March	3.5-5.0	Very brief	Rare
		April	3.5-5.0	Very brief	Rare
		May	---	Very brief	Rare
		June	---	Very brief	Rare
		November	3.5-5.0	---	None
		December	3.5-5.0	Very brief	Rare
99000: Pits.					
99001: Water.					
99003: Miscellaneous water.					

Table 22.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
50000: Adco-----	Abrupt textural change	9-18	---	Noncemented	High	High	Moderate
50001: Armstrong-----	---	---	---	---	High	High	Moderate
50002: Keswick-----	---	---	---	---	High	High	Moderate
Urban land.							
50003: Mexico-----	Abrupt textural change	6-14	---	Noncemented	Moderate	High	Moderate
50004: Mexico-----	Abrupt textural change	6-14	---	Noncemented	Moderate	High	Moderate
50005: Mexico-----	Abrupt textural change	6-14	---	Noncemented	Moderate	High	Moderate
Urban land.							
50006: Vanmeter-----	Bedrock (paralithic)	20-40	---	Weakly cemented	Moderate	High	Low
	Bedrock (lithic)	30-80	---	Indurated			
50007: Vanmeter-----	Bedrock (paralithic)	20-40	---	Weakly cemented	Moderate	High	Low
50008: Keswick-----	---	---	---	---	High	High	Moderate
50009: Keswick-----	---	---	---	---	High	High	Moderate
50010: Winnegan-----	---	---	---	---	Moderate	High	High
50011: Winnegan-----	---	---	---	---	Moderate	High	High
50012: Putnam-----	Abrupt textural change	10-20	---	Noncemented	Moderate	High	High
60003: Menfro-----	---	---	---	---	High	Low	Moderate

Table 22.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
60008: Menfro-----	---	---	---	---	High	Low	Moderate
60009: Clinkenbeard-----	Bedrock (lithic)	20-40	---	Very strongly cemented	Moderate	Moderate	Low
Gasconade-----	Bedrock (lithic)	10-20	---	---	Moderate	High	Low
Rock outcrop-----	Bedrock (lithic)	0-60	---	---	---	---	---
60010: Arisburg-----	---	---	---	---	High	High	Moderate
60011: Arisburg-----	---	---	---	---	High	High	Moderate
60012: Bardley-----	Bedrock (lithic)	20-40	---	Indurated	Moderate	Moderate	Moderate
Clinkenbeard-----	Bedrock (lithic)	20-40	---	Very strongly cemented	Moderate	Moderate	Low
60019: Hatton-----	---	---	---	---	High	High	Moderate
60020: Lenzburg-----	---	---	---	---	Moderate	Moderate	Low
60021: Lenzburg-----	---	---	---	---	Moderate	Moderate	Low
60022: Leonard-----	---	---	---	---	High	High	Moderate
60023: Marion-----	Abrupt textural change	5-18	---	Noncemented	Moderate	High	High
60024: Menfro-----	---	---	---	---	High	Low	Moderate
60025: Urban land.							
Harvester-----	---	---	---	---	High	Low	Low
60026: Weller-----	Abrupt textural change	6-14	---	Noncemented	High	High	High
60027: Weller-----	Abrupt textural change	6-14	---	Noncemented	High	High	High
60028: Weller-----	Abrupt textural change	10-20	---	Noncemented	High	High	High

Table 22.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
60029: Weller----- Urban land.	Abrupt textural change	10-20	---	Noncemented	High	High	High
60030: Winfield-----	---	---	---	---	High	Moderate	Moderate
60031: Winfield-----	---	---	---	---	High	Moderate	Moderate
60032: Winfield-----	---	---	---	---	High	Moderate	Moderate
60033: Wrengart-----	Dense material	20-40	5-35	Noncemented	Moderate	Moderate	Moderate
60034: Wrengart-----	Dense material	20-40	5-40	Noncemented	Moderate	Moderate	Moderate
60035: Wrengart----- Urban land.	Dense material	20-40	5-40	Noncemented	Moderate	Moderate	Moderate
60036: Menfro-----	---	---	---	---	High	Low	Moderate
60037: Wrengart-----	Dense material	20-48	5-40	Noncemented	Moderate	Moderate	Moderate
60038: Rocheport-----	Bedrock (lithic) Bedrock (paralithic)	40-60 40-60	--- ---	Indurated Noncemented	High	Moderate	Moderate
Bonnefemme-----	Bedrock (lithic)	20-40	---	Indurated	High	High	Moderate
60039: Rocheport-----	Bedrock (lithic)	40-60	---	Indurated	High	Moderate	Moderate
Bonnefemme-----	Bedrock (lithic)	20-40	---	Indurated	High	High	Moderate
64002: Freeburg-----	---	---	---	---	High	High	High
64004: Auxvasse-----	Abrupt textural change	12-22	---	Noncemented	Moderate	High	High
64005: Moniteau-----	---	---	---	---	High	High	High
64006: Tanglenook-----	---	---	---	---	High	High	Moderate
66007: Leta-----	---	---	---	---	High	High	Low
66014: Haymond-----	---	---	---	---	High	Low	Low

Table 22.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
66015: Blake-----	---	---	---	---	High	High	Low
66016: Blake-----	---	---	---	---	High	High	Low
66017: Cedargap-----	---	---	---	---	Moderate	Low	Low
Dameron-----	---	---	---	---	Moderate	Low	Low
66018: Darwin-----	---	---	---	---	Moderate	High	Low
66019: Haynie-----	---	---	---	---	High	Low	Low
66020: Haynie-----	---	---	---	---	High	Low	Low
66021: Perche-----	---	---	---	---	Moderate	Moderate	Moderate
66022: Sandover-----	---	---	---	---	Low	Moderate	Moderate
66023: Sarpy-----	---	---	---	---	Low	Low	Low
66024: Wilbur-----	---	---	---	---	High	Moderate	Low
66025: Jemerson-----	---	---	---	---	High	Moderate	Moderate
99000: Pits.							
99001: Water.							
99003: Miscellaneous water.							

Table 23.--Classification of the Soils

Soil name	Family or higher taxonomic class
Adco-----	Fine, smectitic, mesic Vertic Albaqualfs
Arisburg-----	Fine, smectitic, mesic Aquertic Argiudolls
Armstrong-----	Fine, smectitic, mesic Aquertic HapludalFs
Auxvasse-----	Fine, smectitic, mesic Aeric Albaqualfs
Bardley-----	Very fine, mixed, active, mesic Typic HapludalFs
Blake-----	Fine-silty, mixed, superactive, calcareous, mesic Aquic Udifluvents
Bonnefemme-----	Fine, smectitic, mesic Typic HapludalFs
Cedargap-----	Loamy-skeletal, mixed, superactive, mesic Cumulic Hapludolls
Clinkenbeard-----	Clayey-skeletal, mixed, superactive, mesic Typic Argiudolls
Dameron-----	Fine-loamy, mixed, superactive, mesic Cumulic Hapludolls
Darwin-----	Fine, smectitic, mesic Fluvaquentic Vertic Endoaquolls
Freeburg-----	Fine-silty, mixed, superactive, mesic Aquic HapludalFs
Gasconade-----	Clayey-skeletal, mixed, superactive, mesic Lithic Hapludolls
Harvester-----	Fine-silty, mixed, superactive, nonacid, mesic Oxyaquic Udorthents
Hatton-----	Fine, smectitic, mesic Oxyaquic Vertic HapludalFs
Haymond-----	Coarse-silty, mixed, superactive, mesic Dystric Fluventic Eutrudepts
Haynie-----	Coarse-silty, mixed, superactive, calcareous, mesic Mollic Udifluvents
Jemerson-----	Fine-silty, mixed, superactive, mesic Typic HapludalFs
Keswick-----	Fine, smectitic, mesic Aquertic Chromic HapludalFs
Lenzburg-----	Fine-loamy, mixed, active, calcareous, mesic Haplic Udarents
Leonard-----	Fine, smectitic, mesic Vertic Epiaqualfs
Leta-----	Clayey over loamy, smectitic, mesic Fluvaquentic Hapludolls
Marion-----	Fine, smectitic, mesic Aquertic Chromic HapludalFs
Menfro-----	Fine-silty, mixed, superactive, mesic Typic HapludalFs
Mexico-----	Fine, smectitic, mesic Aeric Vertic Epiaqualfs
Moniteau-----	Fine-silty, mixed, superactive, mesic Typic Endoaqualfs
Perche-----	Coarse-loamy, mixed, superactive, nonacid, mesic Aquic Udifluvents
Putnam-----	Fine, smectitic, mesic Vertic Albaqualfs
Rochepoint-----	Fine-silty, mixed, superactive, mesic Oxyaquic HapludalFs
Sandover-----	Sandy over loamy, mixed, superactive, nonacid, mesic Aquic Udifluvents
Sarpy-----	Mixed, mesic Typic Udipsamments
Tanglenook-----	Fine, mixed, superactive, mesic Typic Argiaquolls
Vanmeter-----	Fine, illitic, mesic Oxyaquic Eutrudepts
Weller-----	Fine, smectitic, mesic Aquertic Chromic HapludalFs
Wilbur-----	Coarse-silty, mixed, superactive, mesic Fluvaquentic Eutrudepts
Winfield-----	Fine-silty, mixed, superactive, mesic Oxyaquic HapludalFs
Winnegan-----	Fine, mixed, superactive, mesic Oxyaquic HapludalFs
Wrengart-----	Fine-silty, mixed, active, mesic Fragic Oxyaquic HapludalFs